# Networks for art work

An analysis of artistic creative engagements with new media standards

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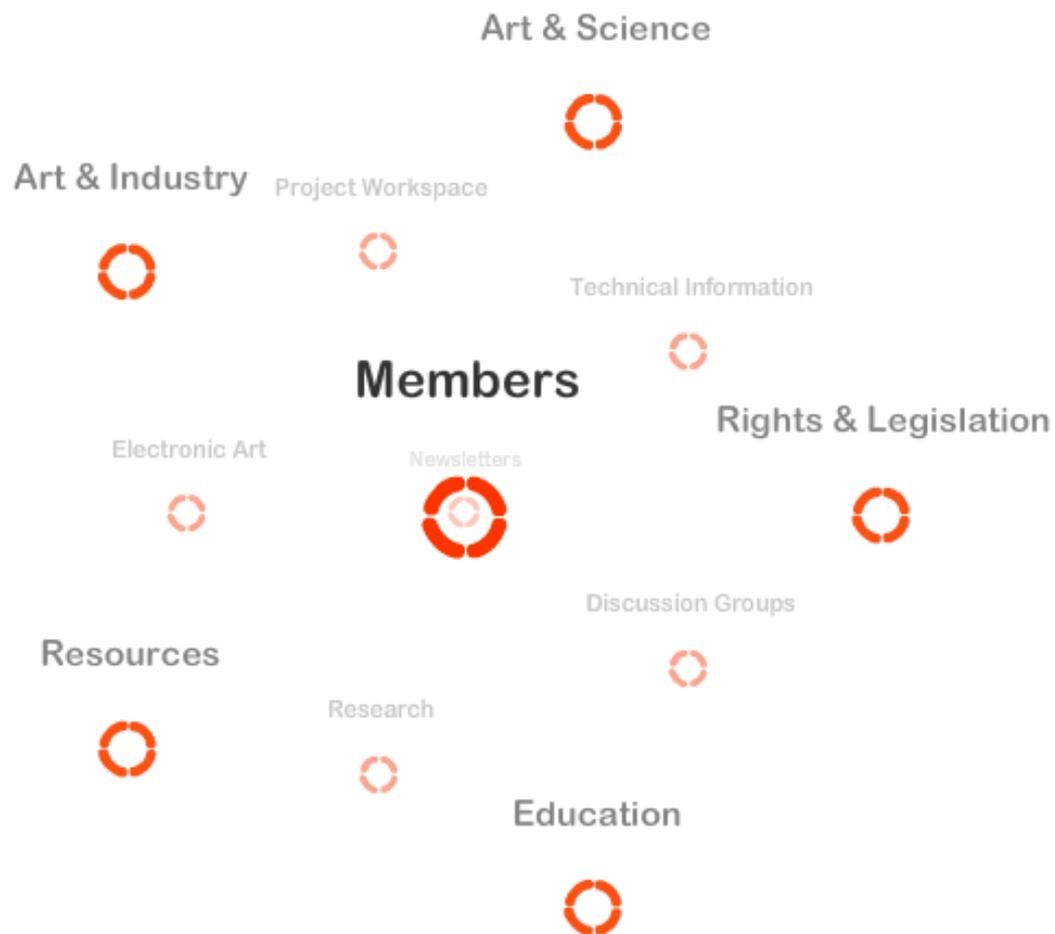
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ABSTRACT

The principle objective of this study is to examine the culture of networks that are implicated in the production of culture, specifically as it pertains to artists' design and use of digitally networked information and communication technologies (ICTs) for the production of artworks. The analysis in this study seeks to reveal a better understanding of the working practices that underpin artists' creative engagements with new media while recognising the significance of discursive continuities that inform such engagements.

Theoretically, a case is presented for combining several theoretical perspectives into a multi-layered conceptual framework for examining the circulation of power as it relates both to artistic creativity and to technological innovation. The former is accomplished through a critical assessment of the production of culture theoretical tradition. In calling upon concepts of discursive conduct as a means of developing relations of power, the concept of maverickness is proposed to understand how certain artists do not necessarily bring about change in an art world but instead dedicate themselves to the production of artistic creativity through a contention among various conventions. The latter is problematised drawing upon theories of mediation to develop a model of the conversion and classification of new media standards into art world conventions. A novel methodological approach is developed based on the development of multiple biographical threads of an individual and of a technology within a single case study of an art world network.

Empirically, the thesis contributes insights into the diverse and contingent collective work practices involved in the design and use of ICTs by artists for the production of artworks. The findings suggest that individual artists are able to develop designer roles consistent with their situated understandings of creative conduct for modifying aspects of the ICT infrastructure despite shifting technological and social new media standards. However, in order to coordinate such roles within wider collective social structures, artists also initiate forms of mediation, articulation, and classification work that extend beyond the production of artworks and into attempts at programming art world networks within which such artworks were produced and distributed.

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INTRODUCTION

1.1 An overview of the chapter

This chapter serves as an introduction to the study. In section 1.2, I present the questions and arguments that informed the overall research, setting out some of the basic signposts that served to guide my analysis throughout and to contextualise my principle research question – How do artists design and use digital information and communication networks for the production of artworks. I also address the wider implications of this study for academic research on art and new media as well as for the general public. Section 1.3 is an overview of the study, providing the reader with a basic outline of its theoretical and empirical aims and as well as the document's structure. I now turn to a reflexion on two review essays dealing with literature related to art/culture and to new media as a way of engaging the larger themes of the study.

1.2 Building a productive dichotomy between the social and the cultural

In a 1994 review essay for the journal Sociology, Roger Silverstone considered a number of recently published books on the topic of culture at a time when, as he himself admitted, an "explosion of interest in matters cultural" (1994: 1001) was taking place. Within these books and edited volumes Silverstone identified a dichotomy in the two main approaches to the study of culture - cultural studies and the sociology of culture - which he described as the difference between cultural ordinary and social ordinary. He argued that the former presented the ordinary of the cultural as fragmented, multifaceted, as the "conventional, the normal. The natural, the everyday, the taken for granted, and the popular." (ibid: 994) He continued:

> *"The ordinary is opposed to the special and the elite. It is also, though perhaps more problematically, opposed to the general, and especially to the bland homogenisings and universalisings of standards in anthropological and sociological cultural theory."(ibid: 994)*

The latter of the two – the social ordinary, he believed, presented the ordinary as one where "cultural forms and products, which are still in many cases far from ordinary ('science', 'art',

public rituals), are to be explained in terms of their production and consumption in the taken for granted activities of daily (and institutional) life." (ibid: 996). These two understandings of ordinariness enabled the study of culture from different perspectives: from the 'inside out' of cultural studies, to the 'outside in' of the sociology of culture. Although he showed a definite penchant for the former, Silverstone saw in this dichotomy the opportunity to identify fertile juxtapositions of both approaches in order to gain a clearer understanding of culture. I relate this account both to illustrate the principle theoretical and methodological challenge of this study and to allude to a part of its solution. One arguably runs the risk, when engaging in the study of culture, to select only one of the two approaches presented above and to pursue its extreme: to examine and analyse culture as a cacophony of the particular or as the bland execution of protocol. The solution, as Silverstone suggests in this essay, lies in the interplay between both tendencies, that is, in a deeper understanding of the social and cultural dimensions of the research subject.

Such a solution is important for this study because it will deal with art and new media, specifically, digitally networked information and communication technologies (ICTs) and their design and use for creating telematic artworks. Upon reading this sentence, one might wonder: where might one find anything ordinary in research dealing with contemporary artists who design and use these experimental technologies? What can someone who is unfamiliar with one or other of these seemingly esoteric, elitist and exceptional subjects learn from a study of their coming together? I suggest that the seeds of the solution lie in a dichotomy akin to the one identified by Silverstone. But before my solution can be brought to fruition, I need to grapple with the roots of the assumptions underlying these two questions. I address the latter question first.

Hyperboles surface frequently in considerations of the production of culture especially in the context of deliberations on the 'rise of the network society' (Castells 1996). The one that I address in this thesis is related to the significance given to whether and how digital information and communication networks support 'creativity'. This term can be problematic in the context of research which deals with artists because of its Romantic baggage (Sennett 2008: 290) which suggests normative assumptions of creativity as necessarily positive and associated with individual genius. As applied by those such as Charles Leadbeater in *We-Think* (2008) or Lawrence Lessig in *Remix* (2008), being creative is often presented as being synonymous with producing cultural content. When ICTs are used for producing this content the 'network of networks' is said to foster creative individuals: individuals who are able to collectively produce and share cultural content. But the implied assumption – that the impetus for the creative production of content is generated when individuals have access to ICTs – seems simplistic and technologically deterministic. "Simplistic" because the Internet is con-

ceptualised as a kind of "wall without museums" to play off Malraux's (1967) *Museums Without Walls*[1]: cultural content flows on a seamless backdrop where all tastes can co-exist with little to no ideological constraints to production or appreciation.

It is "technologically deterministic" because it suggests a correlation between the availability of digital technologies and the desire for cultural work. Such an assumption brings to mind Calhoun's (1998) critique of research on how digital information and communication networks foster community. He suggests that researchers who choose network technology as their starting point are likely to find groups of users who employ the rhetoric of community, thereby confirming the researchers' intuition that ICTs foster the creation of community (Calhoun 1998: 379-385). This approach, he argues, too easily glosses over how community itself is defined through practices that do not need any technological mediation. Instead, he recommends that researchers should look to pre-existing communities and examine whether and how digital information and communication networks support or hinder their sense of community.

If a researcher were to apply this advice to the study of the production of cultural artefacts instead of community, he or she would be drawn to the analysis of an existing social grouping which conducts these practices and to ask whether and how ICTs support or hinder their ability to conduct such work. The researcher would examine what constitutes creativity and innovation for this group, as well as the underlying power relations that enable their production and circulation. In doing so, this same researcher would expect to glean a better understanding of some of the practices that are in use for the production of culture with digital information and communication networks. Here one finds a first opening for an operationalisation of Silverstone's dichotomy: examining the practices involved in producing cultural artefacts.

Artists – producers of cultural artefacts – have an ongoing relationship with the tools and techniques that enable their work practices. In his book, The Craftsman, Richard Sennett (2008) examines the history of the act of making, how people use tools and materials to produce objects. He argues that examining how individuals put time and effort into making these objects, be they craftsmen, artists, or engineers, may enable us to better understand how individuals make social relationships (Ibid: 289). In a similar vein, throughout this thesis I will examine how artists and artists' groups work with tools in order to gain a better understanding of how we as humans can develop meaningful social relationships with or through the material world that surrounds us. My examination of the dynamics of artists' work with artefacts of culture and the tools they use to make artworks is intended to yield a broad appreciation of

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[1] This is cheating a bit since an attempt to make the same play on words with the original French title of the book, "Le Musée Imaginaire", doesn't work quite as well.

the place that such tools, particularly in the age of new ICTs, occupy within society (Mahon 2000).

In the introduction to their edited book, Practicing Culture, Calhoun and Sennett (2007) argue that the study of practicing culture enables researchers to bridge the difference between cultural studies and the sociology of culture:

"Too often the sociology of culture takes on the static character of a sociology of cultural products. It is a sociology of paintings not painting; of values not valuing – or even more, of the place of markets and patrons in the circulation of paintings with too little attention to the creative processes by which they are made and engaged by viewers." (Calhoun and Sennett 2007: 5)

Approaching the study of art in such a way, however, requires that one also extend the same courtesy to new media: by simply understanding new media as a homogenous research object embodied in neutral ICTs, the researcher would fall into a similarly simplistic and, in this case, socially deterministic trap. He or she might fairly be accused of Romantic naivety if it were to be assumed that artists who use ICTs simply determine the socio-technical aspects of the design and use of ICTs.

In a similar yet more recent essay, to the one mentioned above, Jay David Bolter (2007) writing in Criticism, surveys a number of academic studies of new media by comparing three different books on digital media and art. From the start, Bolter is far more pessimistic about his topic than Silverstone. Besides the study of digital media artefacts, he sees little in common between authors such as "Manuel Castells, Lev Manovich, Will Wright, Howard Rheingold, Paul Dourish, Christa Sommerer, Margaret Morse, and N. Katherine Hayles" (Bolter 2007: 107). Bolter does not find a common thread in the three books analysed but a multiplicity of discourses surrounding cultural engagement with new media which he characterises using dichotomies such as "theory and practice, avant-garde and mainstream, elite and popular, and visual and verbal" (Ibid: 116). Bolter's conclusion is also far more pessimistic than Silverstone's in that he suggests that the rise of "social computing" on the web, with applications such as YouTube, generates a scale of creative engagement with new media that threatens, or swallows whole, earlier conceptualisations of the artist's ability to contest and innovate through discursive engagements such as the avant-garde. In this reasoning, the social and cultural ordinary take on more sinister roles. They align themselves within new media in order to minimize the impact of diverging or exceptional creative engagements. This view is a far cry from the rosy perspective presented by Castells of "co-artists [who] do not know each other, except in their art – and this is all that matters" and where "the openness of the web truly democratizes art, at last" (Castells 2001: 199).

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But Bolter (Ibid: 110) is arguably guilty of the same criticism he levels at those "populists" who put too much emphasis on the "new" of new media. In suggesting that "social computing" further erodes artists' abilities to have an impact on visual culture, he suggests that either computing is somehow newly social or that artists are not socially equipped with the means to deal with the scale of these new developments. The first of these suggestions can easily be dismissed. One only has to look at how questions surrounding the design and use of digital ICTs have been deeply embedded in our understanding of how information circulates within multiple facets of society since the early 1950s (Mansell 2008). In this sense, it is essential to avoid a false dichotomy between the social and technological (Castells 1996:5) and to understand new media as multi-faceted with similarly intricate and potentially contradictory collections of practices and discursive notions of innovation and creativity as the ones I alluded to for art. Bolter's second suggestion leads to far more compelling questions of locating the artist's place in society and whether or how such a role is defined and enacted in relation to aspects of the production of culture with new media. Are there characteristics of a particular understanding of the artist's role that are in some way incongruous with the current understanding of cultural production in/with new media? What is clear is that, in order to answer such a question, I will need to invoke theories that enable me to conceive both art and new media as subjects that are not static or uniform, not identical yet not entirely distinct. I will also need to refine such questions into a conceptual framework that can be operationalised for research purposes.

Therefore, in response to the second question above – What can someone who is unfamiliar with one or other of these seemingly esoteric, elitist and exceptional subjects learn from a study of their coming together? – my answer is that by developing a deeper understanding of how artists work with new media, one is likely to gain insight into how we as humans collectively produce culture with ICTs.

In order to answer the first question – Where is the ordinary in research dealing with contemporary artists who design and use experimental digital information networks? – I investigate how the products of subjects such as art and new media are made to be "far from ordinary" and exceptional, in the first place? Just as Silverstone pointed to a useful dichotomy between cultural studies and the sociology of culture through their distinctive approaches to 'the ordinary', I suggest that there is much to gain from developing concepts and methods from both disciplines for the study of how individuals and groups of individuals are able to produce, circulate and appreciate what they deem to be exceptional. I employ the term "exceptional" here, not to suggest "superiority" but the "out of the ordinary" – the creative or innovative – relating to the rules and rhythms of forms, functions and meanings. If art has its Avant-gardes and mavericks (Becker 1982), new media has its culture of hackers who also strive for what

they deem to be freedoms and creativity (Castells 2001: 41-52). It is crucial, therefore, to generate a more nuanced framework for understanding the interplay between art and new media's freedoms and constraints, their innovations and their rules. Such an understanding requires the development of a conceptual framework that can be applied to examine the artist's practices for shifting and adapting between both worlds.

I have undertaken such a project, not to reassert the "creative genius" of a selected few, but to re-examine the assumptions on which our basic understanding of why and how people and technologies make meaningful culture today. The stakes are high since, as is demonstrated above, one's understanding of the alignment/misalignment between the social and cultural is deeply tied to an understanding of relations of power – determining the avenues that are open and those that are closed to groups of individuals in order to create and to bring about change through work with a particular set of technologies and their related practices. In the following section, I outline the theories and methodology that are employed to refine the themes and questions raised above.

1.3 An overview of the study

As a starting point, and as is developed in the theoretical chapter that follows (chapter 2), I undertake the first part of this study by combining insights from two specific theoretical traditions associated with work in the fields of the sociology of culture and cultural studies: the "production of culture" tradition and the tradition of theories of mediation and power. I intend to argue that, through their combination, a conceptual framework can be devised and applied which leads to a better understanding of whether and how artists design and use digital information and communication networks for the production of artworks with the understanding that both "artists" and "ICTs" are social constructs embedded within the wider and disparate social, technological and cultural structures of art and new media. The chapter also refines this question into three interrelated research questions. The following outlines the questions prior to their conceptual refinement:

> Do artists generate a particular kind of approach to the production of creativity and innovation in relation to networked ICTs? If so, how is it articulated and what are the resulting power dynamics for the production of artworks? To answer these questions, it will be necessary to develop a means of conceptualising a mode of discursive conduct and how it circulates among groups of individuals as part of their understanding of what constitutes an artist's role.

> How do artists engage with of digital information and communication networks in the first place? Specifically, how are aspects of new media integrated into an artist's practice over time? To answer these questions, it will be necessary to conceptualise

the type of work taking place when artists engage with new media and vice versa. It will also require the selection of methods that enable an extended view of artists' work over time.

Do artists' engagements with networked ICTs in some way enable or constrain the (re)production of creativity and innovation within social groupings? Specifically, can artists contest aspects of new media for their practice? In the case of these questions, it will be necessary to conceptualise how artists collectively engage with new media and the means used to appropriate or reject aspects of new media.

The framework will therefore represent an attempt to find a productive dialectical relationships between art – specifically, practices and discourses related to the artist's tools of production – and new media – specifically, practices and discourses related to the design and use of digital information and communication networks. As is developed in chapter 2, one of the key relationships is between the implicit and explicit rules of artistic practices with tools of production, what Howard S. Becker (1982) refers to as a set of conventions, and the standards of new media infrastructures as contingent arrangements of objects and practices whose meanings are not fixed (Star & Ruhleder 2001). A specific example of such a relationship is the artist's role as a producer of culture, on the one hand, and, on the other, as a designer and/or user of new media. This opposition is akin to the one developed by Lucy Suchman (1999, 2002) where relations of power linked to roles are not static or predetermined. Another example of this dialectic is the dynamic implementation of networks as organisational structures in art and new media as well as a technological infrastructure, specifically digital information and communication networks.

In chapter 3, I set out the research design and methods used to analyse a specific group of artists working with digital information and communication networks as well as detail how and why this particular group, known as the MARCEL Network, was selected for an ethnographic case study. I explain why this particular group's goals – which include the promotion of "artistic experimentation and collaboration in all forms of interactive art" [2] and the "development of cultural expression on the network"[3] – make it an ideal object of study in that they are dedicated to artistic practices while also engaging in the appropriation of new media tools. Although the selection of a single case study as research design does represent certain limitations for the generaliseability of the study (Hakim 2000:59-72), this approach does enable the collection of detailed observations of practices and discourses at a manageable scale. As part of the process of operationalising the conceptual framework, the chapter will outline a means of stratifying ICT infrastructure for analysis partly inspired by John December's (1996) devel-

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[2] See Online research documents: MARCEL Network (2004b)

[3] Ibid

opment of a similar model. I argue that this stratification enables a nuanced analysis of the role of digital information and communication networks as part of artists' work. Information for the case study was collected through a combination of document analysis, research interviews and participant observation. This information was collated and analysed by merging thematic analysis with the historical constructions of what I refer to as three career threads. Each career thread extends along the spatio-temporal trajectory of an object of research that exists on the crux of the dialectical relationships identified in the conceptual framework: a digital information and communication network, an individual artist, and a group of artists and support personnel working together to produce innovative artworks, what I refer to as an art world network (see section 2.2.5). Part of the last section of chapter 3 (section 3.6) further refines the research questions into a set of specific sub-questions for each of the career threads.

These three threads form the basis for three subsequent empirical chapters, chapters 4, 5 and 6, which provide an overall historical account of the work of this specific group of artists and support personnel (Becker 1982) working with digital information and communication networks. The first of these threads, found in chapter 4, follows the career (Silverstone and Haddon 1994, 1996) of a particular digital information and communication network, from its conceptualisation and creation to its circulation and use by artists. The particular ICT selected is known as Access Grid, a videoconferencing platform using multicasting to enable semi-immersive collaboration. By following its trajectory, it is possible to observe how its meaningful design and use is an ongoing and contingent process of mediation with converging and competing or contradictory engagements. The second thread (chapter 5) follows the career of an individual artist, with a specific focus on the ways in which he and his collaborators articulate a particular form of discursive conduct for the production of creativity and innovation in relation to networked ICTs. The artist selected is Don Foresta, a longstanding practitioner and teacher of new media art; he is also the coordinator of the group which constitutes the third thread below. The artist's thread examines how such an articulation not only takes place through the production of artworks but also through writings, discussions and teaching. The third and final career thread (chapter 6) is an account of events leading up to and including my own participation in an organisation known as the MARCEL Network in which both previous threads are interwoven. The objective of this third account is to examine how the classification of aspects of art and new media are collectively negotiated and produced by artists and their collaborators. This thread documents the coordination of memberships, technologies and projects through the production of lists in the events leading to, as well as during the implementation of the MARCEL Network's activities.

My ambition in Chapter 7 is to provide a synthesis of the research findings developed in the three empirical chapters by analysing certain themes that emerge over the course of their his-

torical construction. Considered in the light of the conceptual framework developed for the study in chapter 2, the intertwining and unravelling themes of each empirical thread provide insight into how the different research objects relate to each other and how, over time, relations of power develop to support and enable their work together. As a conclusion, Chapter 8 tackles the empirical findings in order to draw conclusions based on the initial research questions. These findings indicate that artists are able to contest certain aspects of new media standards as part of their practice. However, how that contention takes place is not a straightforward or homogenous process; artists are at once enabled and constrained by aspects of new media and art. The chapter subsequently assesses and revises the conceptual framework, reviews the strengths and weaknesses of the methods used as well as sets out a series of potential avenues for future research.

1.4 Conclusion

The principle contribution of this study is to establish new conceptual and methodological bridges between studies of new media and of the production of art. I seek to know how artists design and use digital information and communication networks for the production of artworks in order to gain insight into the production and circulation of creativity and innovation relating to the arts and new media as well as to gain a clearer understanding of how society produces culture, specifically with new ICTs.

The aim of this chapter was to provide a brief overview of the study and to present some of the arguments that underpin the spirit in which it was written. As demonstrated above, identifying productive dichotomies between art and new media, as well as the social and the cultural, represents a first step in developing a framework for answering the research question. In the following chapter, I take these broad dichotomies and refine them using two theoretical traditions – "production of culture" and mediation theory – in order to generate a conceptual framework for operationalising the research.

Chapter 2

THEORY

2.1 Art and new media: artistic production and the mediation of ICTs

This chapter sets out a theoretical framework to understand how artists design and use information and communication technologies (ICTs) for making artworks. But part of the challenge facing this research is located in the variable definition of the very term 'culture' (Poster 2006: 134) and what I argue is its uneasy relationship to contemporary art. Observing an artist's work with cultural artefacts is difficult if the researcher defines culture's transformation as something that is the preserve of an artist and beyond the reach of any other social actor. Designating artworks produced by an artist as somehow 'more' cultural than other artefacts and attributing them exclusively to the genius of an inspired author justifiably leads to accusations of elitism. This is particularly relevant to artists who use digital ICTs to produce artworks because they are not part of the traditional artistic canons of painting, sculpture, poetry. Their digital and online work seems to rely on pieces of hardware, software upgrades, protocols and plug-ins that are continually changing. So much so that, to the outside observer, a work using ICTs might be interpreted as an unreflective, spontaneous reaction to technological novelty and so ephemeral as to be outdated by the time the work is produced. Part of the implicit goal of this research is to bring the reader beyond such assumptions. And so, even though the artist is not the only 'expert' on the rules of culture or on the production of cultural artefacts, it is necessary to recognise artworks – be they paintings or prints, songs or software – and those who produce them, as a significant part of contemporary culture.

A reverse designation – one in which everyone produces culture in equal measure and where "everyone is creative" (de Duve 1997:288) – leads to a different sort of problem. In such a case, culture arguably loses its analytical effectiveness (Bennett 1995, 2001, Poster 2006). A solution would be to heed Raymond William's implicit suggestion in the following definition which sees culture itself as an historical construct:

Culture in all its early uses was a noun of process: the tending of something, basically crops or animals. The subsidiary coulter – ploughshare, had travelled by a different linguistic route, from culter, L – ploughshare, culter, OE, to the variant English spellings culter, colter, coulter and as late as eC17 culture (Webster, Duchess of Malfi, III, ii: 'hot burning cultures).

This provided a further basis for the important next stage of meaning, by metaphor. From eC16 the tending of natural growth was extended to process of human development, and this, alongside the original meaning in husbandry, was the main sense until lC18 and eC19. (Raymond Williams 1988: 87)

Tony Bennett (1995, 2001) takes this a step further to argue that the relationship between culture and society is itself complex and historically constructed. Similarly, he argues elsewhere that the emergence of the "everyday" in western society is something that is historically located after the early 1920s (Bennett and Watson 2002: X-XIII) and that it is also socially constructed, in this case, in order to produce conceptions of "ordinariness" and "ordinary people".

I bring in this point to suggest that individuals engaging in any kind of cultural production or consumption must contend with many overlapping or contradictory discourses and social practices. One cannot take the artist's place in relation to the discourses of the everyday and those of cultural expertise for granted. The artist is unlikely to be entrenched uniquely in one or the other. Some artists may even find themselves engaging with discourses of everyday and expert culture at the same time. For example, Bürger (1992) has demonstrated how Avant-garde movements of the 20th century, the Surrealists and Dada, among others, were able to use aspects of everyday life as a part of their relatively unconventional and esoteric work. For these artists, he argues, the everyday offered a means of producing jarring or surprising contrasts for the audiences of their work. (Marcel Duchamp's "Fountain" being an early and arguably prototypical example: taking a urinal and placing it on a plinth in a gallery with an artist's signature (de Duve 1997: 12-13)). Because of the ill-defined relationship between these various social and cultural discourses and practices, the concept of social "worlds" is used to explore the dynamics that exist between artists, their surroundings and the tools they use (see section 2.2 and 2.3 of this chapter for a detailed explanation of their use).

A deeper understanding of the social worlds in which artists work, specifically those relating to the design and use of ICTs to produce art, is likely to yield a better understanding of the wider implications of contemporary technological and cultural developments within society. Building on Bolter's (2007) argument, it is suggested here that a tension between the practices and discourses of the artist's social world and those of the social worlds of new media come to a head within what is referred to as a media artist's work. I therefore examine whether facets of this work, such as cultural production and technological consumption, are interdependent and if so, how they relate to other societal and technological changes and power relations. In this chapter, the uneasy conceptual relationship between contemporary artistic prac-

tise and the practices of designing, consuming and using ICTs is examined to develop a conceptual framework for understanding how artists use these tools to produce works and, in turn, how these tools enable artists to maintain their role within society.

The particular preoccupation here is with what Marilyn Strathern calls the 'enculturation' (Strathern 1994: VII-XIII) or what du Gay (1997) and others (Silverstone 1994, Haddon 2004) call the articulation of ICTs by a particular group of individuals, in this case, a group of artists in order to produce artworks. The overall objective of this study is to develop a theoretical account, informed by grounded observation, interviews and document analysis, concerning how new media artists are collectively constrained and enabled by ICTs to produce artworks.

If culture originally means husbandry, it suggests both regulation and spontaneous growth. The cultural is what we can change, but the stuff to be altered has its own autonomous existence, which then lends it something of the recalcitrance of nature. But culture is also a matter of following rules, and this too involves an interplay of the regulated and unregulated. [...] Someone who was entirely absolved from cultural conventions would be no more free than someone who was their slave. (Eagleton 2000: 4)

If culture is, as Eagleton suggests in the above quote, rule bound and dependent on an understanding and interplay between contention and adherence to conventions, the constant flow into the market place of new technological innovations can be seen as representing certain challenges for those who seek to work with new ICTs to create artworks. Does such an instability and convergence necessitate a particular kind of social dynamic – a specific arrangement of production and consumption practices and discourses– in order for the artist to be able to create meaningful works of art? The research is therefore at once a reflection on the individual artist's relationship to particular ICTs, the relationship between artists who use these ICTs, and the articulation of these relationships into an organisational structure for the coordination of their design and use into a coherent cultural practice.

The overall argument of the chapter is that this question cannot be addressed fully by traditional production of culture research or by reference to mediation theory. It is helpful to combine both in order to examine how artists and other individuals working with artists work with specific ICTs as tools for the production of artworks. In this chapter, it is argued that new media art is intersected by two somewhat distinct social worlds and related discourses: the art world, specifically conventions and discourses pertaining to the role of the artist, and the social worlds of new media, particularly the preoccupations relating to the design and use of digital ICTs.

In order to tackle these two different aspects of new media art the following sections combine two distinct theoretical approaches for the study of culture: production of culture and mediation theory. Section 2.2 introduces work on the production of culture, specifically Howard H. Becker's theories of art world conventions, followed by an in-depth examination of the artist role and how it is mobilised to produce relations of power within art worlds. The section subsequently explores some the challenges the production of culture approach presents when studying new media art. Section 2.3 sets out a framework for understanding new media as a social world and explains how mediation theory allows for the study of the dynamics of technological and social change linked to ICTs within social organisations. Finally, sections 2.4 and 2.5 develop the idea of the network as a technological and social form which mediates the power relations of work within particular artists' organisations.

2.2 Production of culture perspective & art world conventions

This section introduces three concepts taken from theorists working in the tradition of the production of culture: art worlds, conventions and art world networks. It then develops insights into a mode of discursive conduct relating to the production of power relations for the artist.

2.2.1 An introduction to the production of culture

In the mid 1970s, researchers began to apply organisational sociology to the study of processes of production (technological, organisational, economic) of cultural artefacts and to address what implications they have for the meanings these objects take-on. This collection of research has come to be known as the production of culture perspective (Crane 1992, Alexander 1996, 2003: 65-178, Hirsch 2000, DiMaggio 2000, Peterson and Anand 2004). It is useful in demonstrating how organisational structures shape the production of cultural artefacts, particularly in the case of large public organisations (DiMaggio 1986, Anand 2000) or commercial enterprises that produce culture (Peterson 2005). It also provides convincing historical accounts of the social construction of power relations pertaining to cultural production and the organisational structures in which they are (re)produced (White and White 1965, DiMaggio 1986). Some suggest that proponents of the production of culture were instrumental in the 1970s in "encouraging research on institutional factors in the informal production and dissemination of symbols through social networks, families, and subcultures [...]" (DiMaggio 2000:108). Much of this research depends on the concept of convention and art worlds put forth by Howard S. Becker as means of describing the infrastructural coordination of normative and representative values shared between social actors (Becker 1974, Blau 1988, DiMaggio 1987, Becker 1990, Zolberg 1990, Crane 1992, Alexander 2003).

In his book, Art Worlds, Howard S. Becker argues that "a system of conventions gets embodied in equipment, materials, training, available facilities and sites, systems of notation and the like [...]" (Becker 1982: 32). These conventions, be they linked to physical equipment or activities related to their design or use, facilitate exchange between art world actors (artists, audiences, organisations, etc. see below in same section) and constitute the foundations of art worlds:

> *"Every convention implies an aesthetic which makes what is conventional the standard of artistic beauty and effectiveness. [...] An attack on a convention attacks the aesthetic beliefs as natural, proper, and moral, an attack on a convention and its aesthetic also attacks morality. [...] An attack on aesthetic beliefs as embodied in particular conventions is, finally, an attack on an existing system of stratification." (Ibid: 305)*

Becker's model of conventions is a means of describing the coordination of art world activity. Bowker and Star (2002: 34) label this social world model as an infrastructural inversion: instead of studying the resulting products of work in a social world (i.e. paintings, books, piece of music, etc.), the researcher observes the objects and practices that enable and constrain the production, distribution and appreciation of the work itself. The concept of conventions supplies the researcher with a model that creates a web of objects and practices between producers and consumers of cultural goods by demonstrating how they coordinate the production and consumption of resources and values (Battani and Hall 2000: 147-149). Diana Crane (1992: 112) ascribes five key characteristics to Becker's art world model:

1) Artists and 'support personnel who assist them in various ways' (Ibid: 112). (See section 1.2.2 for a more detailed discussion of this facet of art worlds.) Both artists and their support personnel are included throughout the research under the term "art world actors". The scope of art world actors is widened to include gatekeepers, organisations and audiences (see characteristics 3, 4, and 5 below). An art world's actors are a group of individuals, including producers, distributors, and audiences who share specific sets of conventions that help to identify each other and what their role is within the art world. An art world does not have a specific scale and can be extended to any support personnel needed for art world activity (the manufacturers of photographic film, for example, all the way through to the amateur who enjoys portraiture and attends photography gallery openings in the case of a contemporary photographic art world). This means that art world actors in a functioning art world do not necessarily share all of an art worlds conventions, only those needed to coordinate activities between themselves (the amateur photographer does not necessarily need to use or even know about the conventions relating to photographic film manufacturing, nor is there a need for the film manufacturer to appreciate portraiture).

2) A set of conventions as described above. Conventions include technological infrastructure and the practices relating to the production, distribution, and use of such an infrastructure. The essential aspect of conventions is that they include any combination of materials or technologies and how they are employed to coordinate activity in an art world. The term art world designates a relatively stable set of conventions tying together art world actors.

3) A set of gatekeepers such as critics and aestheticians. Becker demonstrates how, in order for these conventions to survive, those who produce and use conventions need wider support and legitimacy in the art world and other social worlds. Such support not only provides actors with greater access to resources but also ensures that aesthetic values gain credibility outside their particular contexts and extend into broader social worlds.

4) Fourth are organisations that sustain and benefit from art world activities.

5) Lastly, audiences who help determine the characteristics of the artworks and art world activities through their active participation.

Conventions within art worlds are interdependent and can form complex arrangements that become what Becker refers to as particular genres and styles such as 'landscape painting' or 'line dancing' which, in turn, are part of larger art worlds such as 'painting' and 'country music', respectively. The art world's core is essentially defined by the type of artwork that is produced, distributed and consumed: a piece of music, a dance, a painting, a film, or any combination thereof. The criterion for a successful art world, besides these characteristics, is simply that it continues to exist. In Becker's work on emerging art worlds, he argues that such success mostly hinges on an art world's ability to acquire ideological support from gatekeepers in order to gain legitimacy from external social worlds and, in turn, to gain more resources and support (Becker 1982: 68-92), eventually turning itself into what the research defines as an institution[4]. Once they are legitimised, their proponents can gain greater access to the resources and other forms of support needed to further develop these conventions. Conven-

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[4] For the purpose of this research institutions are defined as 'composed of rule-like beliefs, behaviours, or practices; they tend to be fixed, enduring, formal and independent of organisations; and they act as real but unseen constraints on organizing' (Lammers and Barbour 2006: 360). An art world institution is defined as the sustained combination of five key characteristics as described above that circulate within organisations – academic, national, as well as commercial – and individuals that have historically shaped what constitutes art in western society; what can also be described as the supporters of the canonical conventions of art (This approach is used in contrast to institution as organisation (Bayma 1995)). Art world institutions are distinguished from other art world models in this research to stress the sets of conventions that have solidified through time and extensive dissemination into discourses and practices which are, in turn, reproduced within organisational structures. The circulation of institutional artistic traditions in the form of discourses and practices within organisations is understood to at once enable and constrain actors' choices and actions.

tions, like standards (Bowker and Star 2002), can become implicit (Becker 1982: 40-67) or transparent (see section 2.3.3), thereby becoming a normative part of the work of cultural production.

Becker's art world recognises that tools and practices may not determine what art is but that tools and practices, nevertheless, have an impact on how art is produced, distributed and accessed. It allows the researcher to track aspects of change and innovation in established or emerging art worlds through infrastructural inversion. No matter how unapparent it may be in the resulting painting, the work of a painter changes if he or she does not have access to paint or a paintbrush. Before further mapping out the conceptual specificities of the art world for this research, it is necessary to develop a key art world characteristic that is followed in this study: the role of the artist.

2.2.2 The role of the artist as a set of discourses and conventions

All art worlds have artists. Becker quotes Tom Stoppard to define humorously the role of the artist within art worlds:

"An artist is someone who is gifted in some way that enables him to do something more or less well which can only be done badly or not at all by someone who is not thus gifted. (Stoppard, 1975, p.38)." (from Becker 1982:14)

The artist role is ascribed to an individual who contributes a certain skill to the production of artworks. The role's birth is historically attributed to events during the renaissance (Becker 1982: 15, Sennett 2008, Gombrich 1999, although Raymond Williams (1976: 42), among others (Bürger 1992, for example), argues its contemporary use did not surface until the 18th century) and has manifested itself in many different forms: painter, sculptor, dancer, author, film maker, actor. In this definition, the artist is identified by his or her work, what he or she 'does': a painter paints paintings.

The above quote suggests that individual artists are distinguished by their ability to perform their skill within the an art world. However, it has been demonstrated that these distinguishing skills are not necessarily tied to the act of producing the artwork itself. In his study of country music artists, Peterson observes how artists strive to achieve career goals by tapping into conventions that confirm their role as artist within the art world (Peterson 2005, see also Hughes 2000). He describes how the enactment of certain sets of conventions by actors allows audiences and other artists to gauge the degree and character of the actor's authenticity as an artist within the country music industry. For example, country music artists who wished to convey an 'old-timer' image of authenticity avoided flashy clothes, wearing only 'going-to-town clothes of a farm person' (Peterson 1997:66). These conventions bear little relation to

the skills needed to technically produce the artwork itself. The work of performing of the role, he argues, not only informs the audience's interpretation of the artist's specific artworks but also suggests, both to the audience and to the artist, what current and future artworks will 'fit' with the artist's existing body of work. It is therefore possible that certain skill sets or attributes unrelated to production are necessary in order adequately to conduct the artist role itself within an art world.

Others demonstrate that, in some cases, the artist role can be distributed among many different actors, including support personnel (see characteristic 1 in section 2.2.1), within an art world (Becker 1982: 77-92, Baker & Faulkner 1991, Battani 1999). In their article on film production of Hollywood blockbusters, Baker and Faulkner (1991) demonstrate how new cultural products, such as the appearance of the blockbuster in the 1970s, can influence the definition of roles within art worlds by reshaping priorities and efficient distribution of resources and creative control. They identify a triumvirate of roles which shape the structural form of the artwork in film: the producer, writer, and director. The specificities of the artist role itself can therefore shift and be redistributed between many individuals, even recombined or subtracted. Baker and Faulkner further argue that these situated roles can then be mobilised as resources by individuals in order to further interests within an art world. The key point in this argument is that even the collaboration of many differentiated and competing artist roles and support personnel still enables the production of an artwork.

Based on these assertions – the work of performing a role and the competing role assignments within art worlds – it is important for an artist to be able to differentiate his or her work as the author or the producer of meaningful cultural artefacts, not only from other artists and for the benefit of gatekeepers, but also for other art world actors such as audience members who are not fully immersed in the conventions of art world production. So the artist role is at once the embodiment of established art world conventions combined with individual aspirations, attributes and skills in the production of meaningful artworks. How artists work is informed by a set of conventions which not only enable and constrain the actions of individuals within the art world but is also shaped by the individuals who perform them. Nevertheless, it should be stressed that the analogy of the role is not employed to imply artifice or the execution of a constraining script[5].

Arguably, therefore, the authenticity of an artist within an art world is constructed over time and space, as much by the audiences and artists and by discourses of what it is to be an artist,

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[5] I offer this as a critique of Bourdieu in King (2004:419, relating to Bourdieu's work in Outline of a Theory of Practice, 1977) and their preference for sports game analogies over those of theatre to discuss agency which is arguably a gross under-appreciation of the challenges and skill involved in acting.

not only what an artist does. In Peterson's case, it is a discourse of authenticity that partly shapes what it is to be a country music artist. By producing conventions that are 'authentic', an individual is better able to work as a country music artist. The concept of roles, as Goffman might argue, is at once 'impression management' (Goffman 1959) and the search for 'footing' (Ibid) meaning a stable set of disciplinary pillars from which to conduct work, and to be approvingly observed performing that same work[6].

This does not mean that an artist's work is largely determined by organisational and technological constraints and support (White and White 1965). But neither is the individual working as an artist free from the discourses that shape the role itself. Such an approach is in line with an understanding of the subject as unfixed (Foucault 1984, Patton 1998) or dislocated (Du Gay 1996: 48). The artist role should be understood as one that is under continual construction and (re)production. Such a process not only takes place face-to-face in the moment. It is also compounded through iteration – through its articulation over time. It introduces the discourse before the author in order to see the emergence of the author. The objective here is as Foucault suggests:

What are the modes of existence of the discourse? Where has it been used, how can it circulate, and who can appropriate it for himself? What are the places in it where there is room for possible subjects? (Foucault 1991: 81)

The following section elaborates on how an individual produces an artist's role that is grounded in the shifting meanings of what constitutes the role. The artist is not isolated from the concerns of the audience or vice versa. This section has developed a framework for understanding how an artist defines/is defined by conventions, be they conventions for the work of making an artwork and/or conventions tied to the work of making an artist.

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[6] Although production of culture's development of the role analogy was developed independently of Erving Goffman's work on performance (Hughes 2000, see Peterson's own interpretation of Goffman in Peterson 2005: 1086), it is instructive to return to Goffman's conceptualisation of the term in analysing agency and its impact on roles. In his seminal work on performance, The Presentation of Self in Everyday Life (1959: 28-82), Goffman demonstrates how actors simultaneously transform and are transformed by the performance of roles in everyday life. These 'fronts' are not so much artifice as much as a way to manage and coordinate the relationships and actions between multiple individuals in social groups in everyday situations. It is therefore essential to understand performance as socially and temporally embedded. Two caveats must be applied to this definition of performance. Firstly, Goffman's relegation of artefacts to 'material props' (Law and Singleton 2000: 771) is 'upgraded' in this study to that of a supporting (and therefore mediating) role in the performance of actors' roles. Secondly, performance of such roles must also be understood as bounded to power relations that generate and mediate meaning associated to these roles (Silverstone 1995: 69 1998). This creates a dynamic model of power relations between actors, technological spaces, and discourses.

2.2.3 The challenge of meaning and power

At this point, I call upon Castells' somewhat general definition of power:

"Power is the relational capacity that enables a social actor to influence asymmetrically the decisions of other social actor(s) in ways that favour the actor's will, interests, and values. Power is exercised by the means of coercion (or the possibility of it) and/or by the construction of meaning on the basis of the discourses through which social actors guide their actions." (Castells forthcoming: 30)

It is with this unadventurous definition of power that this section sets out to map out a theoretical framework for understanding the circulation of power within art worlds and specifically as it pertains to artists and conventions. The reasons for selecting Castells' specific definition are clarified in section 2.4.

Some have criticised the production of culture tradition for focussing too much on the process of production at the expense of the audience's own active engagement with the production of meaning tied to cultural objects (Warde 2002). 'Production of culture' strengthens the impression that meaning occurs only once production is complete: the function of the artist's role and of the support personnel is to produce meaningful artefacts. This over-emphasises the power of the producer to determine meanings without factoring in other art world actors like audiences. More recent work within the production of culture tradition recognises that audience members are able to generate meaning independently of producers, what Peterson calls autoproduction (see Van Eijck (2000), see also Alexander (2003: 60-63) for a discussion on Wendy Griswold's "cultural diamond"). Similarly, Diana Crane (Crane 1992: 77-108) looks to other academic disciplines such as cultural studies and reception theory to compensate for production of culture's over-determination of an artwork's meaning as being structurally dictated by the production process. But these corrections are located at the level of the audience's interpretation of content (i.e. the artwork), not at the level of the technologies designed and used to produce or consume artworks.

In the case of Becker's model of art worlds, part of this theoretical issue may be explained by how his use of the concept of convention glosses over power relations that lead to the production of meaning (Griffin and Griffin 1976). As stated in section 2.2.1, Becker employs a form of structural inversion that conceptualises conventions as embodied in objects and practices. Convention is a potent means for understanding the coordination of the production or reception of meaning but, as he himself admits, is not so well suited for understanding the meanings themselves (Becker 1982: XI, Battani and Hall 2000: 149, see also Gilbert 1983, Eyerman and Ring 1998). His focus is on the work of producing and consuming the objects and prac-

tices that contain these meanings. The only specific mention of how conventions take on meaning is attributed to David K. Lewis' philosophical work on convention (Becker 1982: 55-56).

As developed in section 2.2.1, the coordination of conventions includes other art world actors such as audiences. It also allows for art world actors to share conventions even if they disagree on the meanings of those conventions within the art world. For example, although a professional jazz trumpeter might hate classical music, she would still be able to read a C-sharp from sheet music of a Mozart concerto. This is possible because both jazz trumpeters and classical trumpeters benefit from learning to read sheet music. In this research, conventions will therefore be defined as empirically observable repetitions of objects, materials, and/or the patterns of work between two or more actors that relate to the production, distribution or use/consumption of an artwork. The sum of a set of conventions does not constitute an artwork but nor can an artwork exist without them[7]. Sadly, Lewis' (1969) conception of convention rooted in game theory is not sufficiently unpacked by Becker in the book Art Worlds. The omission suggests a conceptualisation of coordinating conventions that removes power relations and the meanings that underlie their development and evolution.

Arguably, the weakness of Becker's model is also its strength. Because Becker does not over-emphasise the importance of Lewis' work, it is possible to look to other sources to refine the model. Art world conventions also maintain a healthy separation between the social and the cultural. As Tony Bennett suggests (1995, 2001), a sociological model which does not distinguish between the social and the cultural risks ignoring the historically contingent character of the ties between cultural production and wider social and political power relations. Rather than arbitrarily ascribing meaning to all conventions, the theoretical model must carefully examine the production of meaning as it relates to art world conventions without simply conceptualising them as equivalents. Some of Becker's (McCall and Becker 1990: 13-14) later work on social worlds opens the door for the conceptualisation of discourse as a means of analysing the circulation of meaning and its relations of power. In the case of art worlds, this chapter argues that conventions are therefore subjected to discourses. Through conventions that are in line with discourses of authenticity, an individual who chooses to work as a country singer is able to exercise certain forms of power in the country music art world. For example, Hank Williams Senior's ability to articulate authenticity led to his being deemed by critics and historians as an influential artist in the country music art world (Peterson 1997: 173-184, 2005: 1092).

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[7] This is to explicitly address Antoine Hennion's critique of conventions as a sociological attempt to reduce the artwork to "a coordinated and conventional activity" (Hennion 2001: 3) See section 2.6.2.

Applied within the scope of this research, the interest lies in the discourses that define the artist as an individual who 'creatively' and/or 'innovatively' designs and/or uses ICTs. The characteristics of this creativity or innovation, their quality and quantity, are necessarily defined by what an artist 'is' and 'does'. As elaborated in the previous section, such a definition cannot be set in stone. More than likely, it is a dynamic definition that is continually challenged and supported by the discourses and activities that circulate around the social and the technological. In order to gain a better understanding of how artists are enabled and/or constrained in the creation of artworks by ICTs, the conceptual framework and methodology in this study must take into consideration the dynamics of discourses involved in the production of the artist's role.

The quotes attributed to Raymond Williams and Terry Eagleton in section 2.1 suggested a degree of freedom to culture – that it can develop and change autonomously from the individual who tends to it. Though one can nurture art and give it rules, it has a life of its own. Conversely, Foucault states that "power is exercised only over free subjects, and only insofar as they are free" (1982: 790, see also Patton 1998: 69-73). For an artist to have power, therefore, there needs to exist a conventional arrangement for art world freedom: the ability to produce the unexpected through the use of materials, tools and practices. As developed in section 2.1, one example of such an arrangement is the 20th Century European Avant-garde's practice of contesting or contrasting sets of conventions in other social worlds, in this case everyday life, through the production of artworks. These art world actors were arguably able to locate or produce the conditions for the unexpected thanks in part to the discursive technology that I will henceforth call maverickness.

2.2.4 Mavericks

Becker classifies the artist role into three subcategories: the professional (or expert), the maverick and the folk artist (1982: 226-271). The expert artist is recognised by a legitimate institutional art world as suitably (or excellently) working with existing conventions. Conversely, the folk artist works to varying degrees of skills and expertise using conventions from a social world that is not considered 'legitimate' to other art worlds and wider social worlds. The maverick (Becker 1982: 233-246), however, is an artist who interrupts what Becker might describe as an art world's conventional inertia (Becker 1995) by contesting one or many of its established conventions or by producing entirely new conventions. Becker's maverick is ostracised from the wider art world thereby simultaneously freeing and constraining him or her:

"Mavericks thereby lose or forego all the advantages the integrated professional more or less automatically enjoys. But they also lose the constraints associated with those advantages. Participation in an art world makes the production of art works possible and relatively easy but substantially constrains what can be created. [A maverick musician]'s com-

*plete separation from the world of practical music making is almost a laboratory experi-
ment for the discovery of maverick freedoms." (Becker 1982: 236-237)*

The maverick therefore describes an individual or group of individuals who go "against the grain" to create "new" or "innovative" works of art. The role is often contrasted to an existing art world: a maverick painter does not paint with the same conventions as that of a painting art world, the maverick theatre troupe does not perform theatre by the same conventions as that of a theatre art world. Innovation in an art world, therefore, is relative to existing normative expectations defined by existing conventions within a related art world. What DiMaggio refers to as differentiation (1987: 447).

This description of the maverick, however, is susceptible to a wider critique of similar symbolic interactionist[8] work in that it defines the maverick role as a choice taken by free agents thereby minimising overarching ideological constraints. One of these critics is Paul du Gay who criticises Symbolic Interactionism's approach to the study of work – including Becker, a student of Everett Hughes (Du Gay 1996: 31-35) – because it isolates the worker from external power relations that shape interaction. For Symbolic Interactionists, he argues, the worker is an individual able to construct meaningful relationships independently of power relations that surround him or her, work becomes meaningful despite and/or in spite of constraints. In order to compensate for this issue, du Gay's research turns to Nikolas Rose's (2000) theories of governmentality based on the later work of Michel Foucault (see also du Gay (1997) and McFall (2008) for an introduction). Du Gay's work on conduct and social worlds (Du Gay 1996, 1997, du Gay et al. 1997, du Gay and McFall 2008) examines the 'conduct of conduct' in order to better understand the discursively mediated practices that enable the production of individual conduct within these worlds. For him, subjects engaging in work enter into a dialectical relationship with discourses that prescribe certain forms of meaningful conduct.

Following this line of argument, by using a new technology to produce artworks, a maverick may in fact challenge a whole series of interrelated conventions. But conducting oneself as a maverick may be part of a wider cultural and historical discursive construction which in turn shapes its own conventional practices and tools (See de Duve (1997) for a wider Foucauldian analysis of the role of the Avant-garde artist in the 20th century). Specifically, the role of the maverick artist may be tied to an historical conceptualisation of individual freedom and contention. Maverickness can be understood as constituting a technology of the self which does

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[8] Du Gay (1996: 27-28) defines symbolic interactionism as a school of thought born in Chicago which combines the American pragmatist philosophy (ex. J. Dewey) and German formalist sociology (ex. G. Simmel) in order to deny "the utility of macro-sociological reasoning" in favour of "portraying the social as a fluid and changeable series of transformations".

not necessarily equate to innovation or change in an art world but that is dedicated to the production of innovation through the contention of conventions. It is a mode of discursive conduct that shapes and is shaped by the artist's work leading to transformations in an art world. In this sense, maverickness is quite similar to Rose's and du Gay's conceptualisations of enterprise in that it is a discursive mode of conduct linked to valuing flexibility and initiative.

Maverickness therefore not only functions as a constraint, it can be exercised by an artist as a resource to generate relations of power within an art world. By conducting themselves as mavericks, artists work to distinguish their artistic practice from an established set of conventions, thereby gaining notoriety, prestige, or some other form of art world power. Maverickness is fundamentally relational in that it depends on an art world from which the conventions it contests are produced. An art world expert could therefore just as easily conduct maverickness through the conventional contention of art world conventions.

Maverickness as a form of conduct transcends the artist role just as du Gay's (1996: 139-145) entrepreneurialism flows out of the boundaries of work life and into everyday practices. This overflowing enables the artist to appropriate norms or standards from other social worlds into an art world as convention. The artist may in turn take this further and deploy maverickness as a means to contest established socio-cultural norms through his or her appropriation as artistic conventions. Based on this framework, I suggest that an innovative artist-maverick may be one who contests established art world conventions by appropriating working standards of the design and use of ICTs (see section 2.3) as art world conventions.

For example, in the late 1990s the artist group RTMArk produced a number of websites that mimicked political websites such as George W. Bush's electoral website or the World Trade Organisation website (Stallabrass 2003: 90-94). The websites' designs reproduced the innocuous standards (see section 2.3.3 for definition of standards) and language of other corporate websites but through its deception the websites also invited the audience to question the trust it puts into such arrangements. This example is a compelling illustration of the need to examine the culture of production for the production of culture (du Gay 1997) because it is not only the resulting websites that give meaning to the work, but also the artists' and the audience's familiarity with a number of norms and standards that extend beyond the aesthetic qualities of the work such as the standards of a corporate website. In the case of this work, from an art world standpoint (I leave the legal standpoint to the law makers), the artists or their supportive gatekeepers are able to argue for the work's worth through the maverickness of the artists' production and/or contestation of conventions within the art world (as opposed to plain old fraud). The work depends on the audience's familiarity with the standards and

norms of a corporate website rather than on producing entirely novel conventions. But it also depends on the how these norms and standards are converted into new or exceptional convention in an art world. If a number of other artists began producing similar artworks, they would arguably be hard pressed to produce relations of power based on maverickness even though they continue to contest established corporate norms and standards. The maverick artist's successful or unsuccessful deployment of conventions – even those that are appropriated from other social worlds – is not just about gaining advantageous positions in relation to other competing individuals; it is also about coordinating the familiar and the unfamiliar in a way that allows these power relations to take shape.

This combination of social worlds can also be extended to the artist role as one that is not negotiated separately from other social and cultural forces. Singerman (1999), for example, presents a convincing account of how discourses from other social worlds, in this case the academic discourse of intellectual professionalisation in the late 19th and 20th century United States, shape our understanding of what it is to be an artist today. Maverickness, therefore, is likely not the only discourse through which the artist is able to generate relations of power. These two aspects of the conduct of maverickness through art world work – the intermingling of art world conventions and of discourses with those of other social worlds – suggests that an artist must be able to walk not only a tightrope between new and established art world conventions but must also juggle a number of other social world norms and discourses. Though the artist is able to conduct maverickness through the appropriation of norms or standards from outside the art world, such an appropriation still depends on a differentiation between social worlds and the art world.

This section has developed a framework for understanding a particular kind of artist, one who works with conventions in an art world while conducting maverickness as a means of (re)producing relations of power. But this theoretical framework risks overlooking the collective aspects of such work, the wider organisational context in which conventions and discourses circulate.

2.2.5 Art world networks and organisations

The sheer number of terms used to describe different organisational social structures in the arts is proof of the difficulty of defining the boundaries of these collective arrangements: 'groups' (Ridgeway 1989), 'schools' (Gilmore 1988), 'simplexes' (Peterson & White 1989), 'circles' and 'acquaintance networks' (Crane 1989, Crane 1992) or art style (Crane 1987). It is arguable that this problem of art world classification extends to contemporary forms of organisations adapted for the particularities art related to the design and use of ICTs.

Art worlds do not constitute a community (see the following for discussions on the difficulties of applying "community" in social science research: Calhoun (1998) Wilson and Peterson (2002: 455), Linddkvist (2005)) because membership is not necessarily as stringent and does not necessarily involve shared values or traditions. Art world actors do not have to share identical conventions to participate (see the definition of art world actors in section 2.2.3). It may include many disparate or competing social networks of varying density. As section 2.3 will argue, they are embedded (Granovetter 1985) to varying degrees within the porous structures of other social worlds.

In order to study artistic work at a more "meso" level, Diana Crane adapts Becker's model to develop smaller urban art worlds within the larger framework of the art world model (Crane 1992: 112-129). One of these, the network-oriented culture world or what will be referred to in this study as an art world network, encompasses socially peripheral or experimental artistic activities that are not recognised by general publics. She describes artists within these networks as having more freedom and control over their work because audience members who actively support them, although smaller in number, are already familiar with the conventions needed to appreciate the artworks. Often, these audience members are active artists themselves; they participate as audience members in order to stay aware of new developments and subtle changes that might arise in the network's activities. Such networks are sometimes described as Avant-gardes in that some may eventually be recognised as innovative and the originators of future successfully established art worlds.

Peterson and Anand (2004: 322) attribute Crane's inspiration for these networks of production to her interest and research on the dissemination of innovations in scientific discovery (See Crane (1987: 44) for explicit ties to Kuhn's work on paradigms, see also Zolberg 1989, DiMaggio 2000). She attempted to situate and understand innovation within the context of such creative organisations. This approach presents the avant-garde as cultural innovators: those individuals who, with the support of gatekeepers such as critics and patrons, bring about cultural transformations through the dissemination of new art world conventions. Such networks are therefore fertile organisational structures for the (re)production of maverickness discourses.

Crane classifies an art world network according to three different types of what is considered in this research to be maverickness: 1) through its "approach to the aesthetic content of its artwork" (Crane 1987: 14) – if it contests established conventions of the artist's work as elaborated by Becker; 2) through its "approach to the social content of artworks" (Ibid: 14) –if it questions established dominant discourses pertaining to an artwork's meaning in art worlds or social institutions; 3) through its "approach to the production and distribution of art"

(Ibid: 14) – if it contests the wider established organisational conventions surrounding the production, distribution and appreciation of artworks. These alternating emphases expand on the kind of maverickness conducted by art world actors. Maverickness in an art world network is not necessarily isolated to an artist's relationship with conventions and may extend to a wider array of actors, discourses and their relationships.

Art world networks depend on what Crane calls a "constituency" (Crane 1992: 119) of galleries, journals, and museums or other patrons to gain wider institutional support and resources. But one might argue that these networks, before being legitimated by critics and support personnel, are negotiated beforehand (or at least simultaneously) between the artists themselves. Becker (1982: 349) himself admits that he can only venture guesses as to why one set of conventions and its related art world gained credibility while others did not. This is perhaps because of how he has distilled the power of meaning itself from the act of coordinating production which is addressed by discursive technologies such as maverickness (section 2.2.4).

Crane, among others (Peterson & White 1989), associated these art world networks with innovation in cultural production and the transformation of conventions within avant-garde art worlds. In this way, the art world network model implicitly maintains what Williams (1988: 87) defines as culture's etymological ties to breeding. Cultural or artistic innovation becomes dependent on the work's ties to lineages of artist groups, aesthetic forms, and ideological arguments. Instead of a single avant-garde in time and place, it is a series of 'genetic' Avant-gardes. Rather than a timeless truth embedded in the artwork that is posthumously discovered by a wider audience, the quest for artistic influence in art worlds through art world networks is tied to the husbandry of various resources, practices, and discourses into new works. In an art world network, success depends on the promotion and dissemination of these works within the network and, eventually, to an ever widening constituency (Crane 1992: 119-120).

Because of this, an art world network is closely defined by the tools and materials the artist uses as much as by the artwork itself. Over the course of one of her investigations, Crane identified three art world networks in the New York art world of painting of the mid-20th century – abstract expressionism, figurative art and photo realism. Part of her analysis of these networks determined that the social boundaries of art world networks are imprecise. They are not limited to a uniform set of conventions nor do they establish an explicit system for determining membership to any of the movements. Its members are not prohibited from working with artists affiliated with other styles (Crane 1989: 270). Nevertheless, this research is to some extent dependent on the conventions of painting as a medium for artistic expression. But painting is not an entirely stable practice. Its story is marked by a multitude of conventional transformations (Gombrich 1995, 1999) that arguably affect how paintings are pro-

duced, distributed, and consumed. Crane's use of the conventions of painting function as one of a series of methodological boundaries for researching social ties and its relation to changes in content.

In a wider research on art world networks from the same period and region, Crane finds that those that focus on transforming aesthetic conventions (art world network 1 above) are faced with "the problem of the exhaustion and renewal of the paradigms on which their innovations were based" (Crane 1987: 141). Their maverickness is challenged by a continual "upping the ante" of artistic innovation relative to conventions of production. Those that focus instead on arguments over "representation" and ideological discourses are better able to struggle for distinction and success.

More recently, Lash and Lury's study of a more contemporary art world network, that of the Young British Artists in late-20th Century London, suggests that art world networks now exist within "a field expanded outside the restricted economy of the institutional art world to the general, global economy of cultural and financial flows" (2007: 79). They argue that artists and their support personnel are now able to circumvent the boundaries of art world conventions and traditional gatekeepers in order to address wider constituencies thanks to overlapping cultural, economic and political networks. Applying this reasoning to my research, one might argue that artists working with new or emerging ICTs are able to tap directly into global infrastructures to produce and distribute their work. Understandably, Lash and Lury's study does not address how artists are able to articulate a meaningful and coherent role within these networks because it implies their eventual dissolution into global flows. But this is the key question as it suggests that without such an articulation, it is unclear how the artist can secure and maintain advantageous relations of power for the production of artworks. The reason for this oversight is arguably due to the researchers' and the Young British Artist's downplaying of the artist's relation to the tools and materials involved in the production of artworks. The following section addresses some of the work in the production of culture tradition on this matter before considering how such conventions are informed or imposed by external social or cultural forces such as standards from other social worlds.

2.2.6 Production of culture and technology

And so I now turn to 'production of culture's' record in dealing specifically with the question of appropriating technologies as conventions in art worlds. With the advent of ICTs like the Internet, it is possible to question what impact digital technologies have on the likes of art world networks and how they are able to reach new audiences (DiMaggio 2001, Peterson & Anand 2004). But these questions relate to concerns about audience awareness and access. They also arguably conceptualise ICTs as simple distribution channels. This minimises ICTs'

role in the process of cultural production and seems to work on the assumption that the artworks themselves remain discrete units of content that stem from the work of a producer who, in turn, distributes it to an audience. It does not consider those who, instead of using ICTs as a means of distributing or promoting their paintings or films, also work with the ICTs themselves to produce artworks. In what way do these technologies influence the art world network's activities and vice versa? In order to answer this question, it is necessary to further unpack 'production of culture's' understanding of the role of technologies within art worlds.

Taking an expanded view of technologies, Howard S. Becker (1982, pp.314-350) compares the development of two similar technological conventions of production with somewhat promising artistic applications in the late 19th and early 20th century. The first of these is stereoscopy, the second is photography. He describes how the latter went on to be accepted by most of society from the amateur to the institutional art world as a tool for artistic creation while the former is remembered as a temporary fad that was quickly relegated to obscure collections of curiosities. Becker is unable to provide the reader with a definitive answer as to why one succeeded while the other did not. He does however demonstrate that some of photography's most influential representatives, such as Joseph Stieglitz, were able to successfully court the respect of art world gatekeepers in order to secure photography's legitimacy among a wider constituency. In a more recent study which sheds more light on photography's success, Battani (1999) provides a useful historical account of the discourse mobilised by daguerreotypists in the 19th century in order to reinforce the role of the "photographer-as-artist" (Ibid: 604) to better promote the photograph as a significant cultural artefact. Using the role of the artist to distinguish between high and low photography (high – non-commercial and low – commercial), between the creative genius and the technician. As he explains:

"By the 1860s successful entrepreneurs had effectively defined the role of photographer as distinct from other roles in the emerging field of photographic production and they did so in large part by capitalizing on cultural resources that allowed them to link their economic interests with a sense of moral worth and social standing." (Battani 1999: 604)

Certain individuals are able to construct a legitimate expert artist role. But his distinction of the role of the photographer remains narrowly framed within the notion of a producer of culture. His findings reinforce the centrality of the role of the artist within an art world. The findings also show how technologies of production are employed to establish barriers for entry into certain art world roles and support the subsequent powers and constraints that come with such a role. In the case of photography, support structures, particularly supply houses and trade journals, helped reinforce such barriers. Sadly, because of the historical scope of the

research, Battani is unable to analyse the nature of the working relationship between said artist and the technologies.

In the research, Battani represents the socio-technological trajectory of technologies such as daguerreotypes and photography as relatively stable in that they are used solely for the production of pictures. Differentiation and the establishment of power relations takes place at the level of discourse and the development of content with little consideration for the way these technologies are articulated as conventional tools for the production of photographs.

Other 'production of culture' research either downplays technological issues altogether (DiMaggio 1987) or classifies technological development as instigating change or innovation (Peterson 1982, Zolberg 1989, Peterson and Anand 2004) rather than as a dialectical relationship between actors and technologies. Peterson (Peterson and Anand 2004) attributes importance to technologies by listing them as one of the six key aspects of art worlds. However, in this model the process of a technology's arrival into art worlds is not sufficiently examined. Its role in the art world takes on a "take it or leave it" quality which seems technologically deterministic.

Part of the reason for this may lie in how technologies that are designed and used to produce artworks are often employed to determine boundaries for art worlds. This may, be traced back to the academic (in the sense of Royal Academies of Art) tradition of naming the role of the artist after the medium used in the process of production: a painter paints paintings, a sculptor sculpts sculptures, an engraver engraves engravings, etc. For example, in her book on production of culture, Crane (1992, see also Crane 2002, Bielby and Harrington 2002) is able to address the film and television industries as art worlds at the larger inter-firm level on a national and international scale through the shared media of film and television networks. Similarly, her book on the avant-garde limits itself to "plastic arts" of the mid-20th century New York Avant-garde, explicitly avoiding less traditional media for artistic expression in these art worlds (Crane 1987: 145). The same aspects of technological conventions that enable artists and researchers to classify an art world are therefore taken as implicit conceptual and methodological boundaries (see transparency in section 2.3.3 below).

Such boundaries are not an issue as technology's role is limited to its functionality in enabling or constraining artists' work of producing meaningful artefacts. But it may be instructive to examine how such technologies are employed by the artists themselves as a way of meaningfully defining the art world. As the social world and its technological conventions develop, the possibility arises that those conducting work within the social world are affected by these objects (Du Gay 2008: 22).

If technological conventions function as a kind of "boundary object" (Star and Greisemer 1989) for researchers studying art worlds, they become all the more relevant in the case of art using ICTs. This is because classifications and linear trajectories based on technological processes of production may not be as useful in defining an art world's boundaries when dealing with digital ICTs. Leah Lievrouw and Sonia Livingstone identify a convergence of the social and technological in new media which, in the case of this study, suggests how difficult it is to make such differentiations:

"The convergence of ICTs that has been facilitated by the parallel convergence of entertainment, education, work and civic activities, and interpersonal communication, requires a more radical rethinking of people's relation with and understanding of ICTs." (Lievrouw & Livingstone, 2006: 7)

It is therefore unwise to simply extend similar technological boundaries to the study of art worlds that include artists and ICTs without taking into consideration the social and technological dynamics of new media itself, something the production of culture tradition seems ill equipped to do. Nor should one assume in this study that the design process for ICTs, be it for artistic production or anything else for that matter, takes place apart from the dynamics of the needs and values of society at large.

The development of an art world as presented in this section is a complex and fragile set of interrelated conventions, actors and discourses. What the art world provides is a model for studying the organisational relations of production, distribution and the consumption of cultural goods. It provides researchers with the means to study the macro level of cultural organisations and institutions and the micro of individual producers or consumers of cultural products. It also provides the researcher with a means of analysing the middle ground where organisational structures between artists, other art world actors, technologies and discourses are collectively negotiated.

Rather than looking at what impact the consumer or the producer can have on the artefact, this study focuses on the location of both the producer and the consumer within the role of the artist; how the artist is locked within a struggle to autoproduce and produce. In other words, to see whether the conventions mobilised by the artist are the result of a negotiation in the dialogical relationship between consumption and production which, in turn, generates meanings that must be communicated to others. If this is the case, the study must examine how this is mediated by the artists, discourses and technologies involved in the process. If we pull back to look at the idea of the artist as a cultural producer, we realise that this is what is at stake in the conception of art and its relationship to the wider new media social worlds.

Returning to the Calhoun and Sennett quote in chapter 1 (section 1.2), if this study were transposed to the art world of painting, it would be parallel to that of asking a painter what the difference is between "What kind of paint to use?" and "How to use paint?" in the work of defining his or her role. Debates around what brand of paint to use may fade to the background, becoming a question of personal preference. How to use paint may be put to the foreground becoming a question of aesthetics and style. In a sense, this theoretical example would lead us to conclude that the act of purchasing and using paint is a lesser concern among painters than is the act of producing the artwork itself. But is this the case for digital media? Could the choice of what software and hardware to use supplant how that software and hardware are used? Rather than the transformative powers of a medium, it is to mediation and its implications for both the social and the technological aspects of the production of artworks that this chapter now turns.

2.3 The social worlds of new media and the design and use/consumption of digital ICTs

2.3.1 Media art world history

Histories of new media art do exist (Wilson 1991, Loeffler & Ascott 1991, Stallabrass 2003, Gere 2006). But many of them concern themselves with the aesthetic and epistemological debates attempting (or decrying) canonical overviews of recent or not so recent artworks. Others test approaches to the reading of specific artworks or genres (for example Manovich 2001, Bolter and Grusin 2000). Academic works by the likes of Stallabrass (2003) document how representatives of the traditional art world organisations such as contemporary art museums and galleries have been unable to absorb new media art within their traditional organisational and curatorial paradigms. Nascent media art worlds do, however, have significant organisations that support their activities (the scope of the following list does not include more commercially driven art worlds such as the video game industry or traditional media industries which have migrated some of their production to digital media forms). In Europe, organisations whose mandates are exclusively focused on media art or artworks using digital ICTs include the Zentrum für Kunst und Mediantechnologie (ZKM) and the Institut de Recherche et Coordination Acoustique/Musique (IRCAM) and festivals such as Ars Electronica in Linz. In North America, one finds organisations such as the Langlois Foundation and Rhizome and yearly events such as SIGGRAPH sponsored by the Association for Computing Machinery's Special Interest Group on Graphics and Interactive Techniques. There is also significant academic support such as the journal Leonardo and its related publications through the MIT Press to name only one example. The role of the artist as someone able to work with new media is therefore supported by these organisations. New media art is an emerging art world in

which actors and organisations reproduce and transform conventions and discourses related to new media.

Rather than getting bogged down in the semantic debates of what exactly constitutes new media art as an emerging art world and how it relates to other art worlds working with digital ICTs, this study focuses on an art world network, in Crane's sense of the term (see section 2.2.5), that works with digital information and communication networks to produce and distribute artworks. Wider art worlds that employ new digital media –including film, commercial video-games, and television networks - are much too diverse and complex to be sufficiently defined and applied as boundaries for this research. The application of both convention and art world concepts would become a little unwieldy if not applied to a specific object of inquiry. This research therefore examines a particular art world network's attempts to generate a set of conventional roles around the use of a specific ICT for the production of artworks (see chapter 3). By focusing on specific sets of conventions pertaining to the use of an ICT by artists to produce artworks in a specified art world network, the research concentrates on the ICT's enculturation and the articulation of the artist's role.

In order to examine these processes the conceptual framework must address the specific properties of digital information networks and how they become art world conventions. Little work from the 'production of culture' perspective deals with how meanings of innovative technologies are adapted by artists to become conventions for the production or distribution of artworks. The following section turns to mediation theory as a means of addressing artists' participation and engagement with the design and use of ICTs.

2.3.2 The social worlds of new media

The social worlds concept is particularly useful in the case of new media because these worlds "do not necessarily conform to geography or organisational boundaries" and because "people can belong to multiple social worlds simultaneously"(Fitzpatrick, Kaplan, and Mansfield 1996: 339). For the purposes of this research, the social worlds of new media are defined as the collection of emerging socio-technical relationships between individuals, organisations, and technologies that are involved in the work of designing, distributing, consuming and using digital ICTs. This is a sociological definition of new media worlds which considers the converging preoccupations around design, use/consumption of ICTs and the discourses that articulate this work. New media constitute sets of traditions and values relating to the design and use/consumption of ICTs (Flichy 2006, Poster 2006, Robins and Webster 1999) that become visible in discourse. This section examines the properties of new media social worlds before going further to develop this aspect of the conceptual framework for this study.

Section 2.1 presented Bürger's examination of how artists generate and contest conventions by contrasting the results of art world work with the socially constructed discourses and conventions of everyday life. Researchers in the fields of media studies and information systems have also identified complicated and contingent relationships between new media social worlds and the everyday (see section 2.3.3 for an in-depth example). One of the ways in which this relationship is represented is through what Flichy calls the distinction between the professional and leisure spheres[9] (Flichy 2006). Such a distinction arguably enables the researcher to differentiate the 'expert' work taking place within social worlds from the "everyday experiments" (Giddens 1994: 59) conducted by 'everyday people'. But employing such a clear distinction to define new media also represents a conceptual problem for our model because it conflates a dichotomy similar to the one identified in section 2.1. In this case, instead of having to choose between the production of culture as being the reserve of an elite or the ability to produce culture as being available to anyone equally, it reinforces a dividing line between use-value for work with new media and meaningful engagement with new media as consumption.

Mark Poster (2006: 134-135) signals a risk for new media that is similar to the one highlighted by Bennett (see section 2.1) for culture and society in that grafting culture to ICTs as an indiscriminate whole underplays the historical specificities and contingencies of an ICT's meaningful development. As a way of recognising this indeterminacy in this study I acknowledge that, like art worlds, there exist a number of new media social worlds and that their meaningful arrangements on a global and local level are not predetermined. Nevertheless, I also recognise that aspects of these worlds are interconnected by networks of ICTs in time and space that some classify as the information society (Castells 2000). I employ the term new media social worlds in a way that acknowledges new media's historical emergence as well as its embeddedness within wider global socio-economic and political realities (Castells 2000: 5-13, 28-76) all the while respecting du Gay's (2003: 666) caveat about epochalism's seductive ability to overgeneralise based on an analysis of the particular. What needs to be examined in this research is whether or not an art world network and the power relations that apply to artists such as maverickness are sustainable when combined with new media social worlds, particularly when using ICTs to conduct artistic work. Or whether maverickness - the discursive conduct of the contention of art world conventions – is played out differently when designing and/or using ICTs.

2.3.3 Innovation and the social construction of ICTs in new media social worlds

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[9] In the case of this research, Flichy's (2006) distinction between professional and leisure spheres is arguably of little analytical use since the artist might fall both in categories.

If one understands the social worlds of new media as an historically constructed set of discursive practices and technologies, one must employ a framework that enables an examination of the appropriation of ICTs between a new media social world and an art world. This chapter has already explored how 'production of culture' research taps into the study of scientific innovation in order to better explain innovation within art worlds (section 2.2.4). The social dimension of innovation in science and technology has been itself extensively researched since the 1960s (see Edge (1995) for an overview). An example of this type of research is the social construction of technology approach, which explores the importance of agency in the process of innovation (Dholakia & Zwick 2004). It is therefore arguable that some strands of the social construction of technology developed in parallel with some strains of 'production of culture' research. The social construction of technology literature, however, demonstrates more strongly the role of users in the design of a new technology.

Some would argue that the way in which some of 'social construction of technology's proponents conceptualise the user as an independent agent, free from discursive constraints (Klein and Kleinman 2002) leads to another form of technological determinism (Bakardjeva and Smith 2001:11). Such a critique is arguably similar to the one presented by du Gay of symbolic interactionism in section 2.2.4. The user's appropriation of technology must be understood as being framed by discourses that extend beyond the individual (Shove and Pantzar 2005). Before addressing this challenge, this section develops further ties between 'production of culture' and the study of new media as it relates to the 'social construction of technology'.

In their work, Susan Leigh Star and Geoffrey Bowker (2000: 34) employ an infrastructural inversion in a similar way to the one used by Becker in Art Worlds. Their objective is to analyse "the technical networks and standards, on the one hand, and the real work of politics and knowledge production on the other" (Ibid: 34) to describe the production of standards and classifications for the production and use of information. They find that the social worlds pertaining to the infrastructure of information systems are coordinated in a similar fashion to that of art worlds where standards (such as protocols and classification systems) are conceptually similar to art world conventions. New media social worlds can therefore be understood as being linked together by standards that enable and constrain the coordination of ICTs. Bowker and Star's findings related to standards provide a means of delivering and coordinating information but also a form of power relation tied to the circulation and production of knowledge. Standards transcend more than one social world (Bowker and Star 2002: 13). Standards are therefore distinguishable from conventions in this study in that conventions apply to art worlds while standards act as a bridge between multiple social worlds. So although a technology may be normalised in everyday life and standardised within an information infrastructure, it may still be unconventional when utilised in an art world context.

Bowker and Star (2000:15) present classification as the other side of the standards coin. Classification work is the work of creating categories that may one day become standards, while standards entail a classification system. Finally, classifications are defined as "objects for co-operation across social worlds, or as boundary objects (Star and Griesemer 1989)" (Ibid:15). Lowood (2001) critiques this conceptualisation of classification as not being specific enough. In the case of this study, I define standards as the ICTs and their related practices that enable and constrain work between individuals within social worlds. I define classification as the work of representing – or attempting to represent – standards as conventions and vice-versa. Returning to the earlier example of RTMark in section 2.2.4, the artists used HyperText Markup Language (HTML) standards of the World Wide Web as a part of their work. By classifying their appropriation of these standards as a means of subverting the "mechanical, soulless, minuscule" (RTMark quoted in Stallabrass (2003: 94)) power of corporate interests, RTMark are not only contesting political power. They are also engaging in the work of classifying a maverick convention for new media art: a standard corporate website design for the critique of political or commercial power. As with conventions, standards are not all persuasive or overpowering when applied to social worlds. A standard's proponents engage in a complex dialectical negotiation with the situated actors and technologies involved. As standards are modified and appropriated by social actors, they can be made transparent.

In a chapter on The Uses of Experiment, Simon Schaffer (1989: 67-104) presents the concept of transparency as a means of analysing the negotiation of standards surrounding tools for scientific experimentation. Before scientific communities could recognise experiments in the natural sciences, he argued, the tools used in an experiment underwent a legitimating process of standardisation which he named transparency. If the standardisation was validated, technologies became transparent making it possible for scientists to overlook the infrastructure that enabled experimentation and concentrate on the scientific argument of the experiment. Shaffer likened his concept of transparency to Trevor Pinch's black boxing (Ibid: 70, see Rosenberg (1982) for another application of the black box metaphor to technology) in which knowledge was enclosed into a fixed object. Transparency, like a black box, made a technology's standards invisible. Star, Bowker and Neumann describe transparency as the result of a "process in which status, cultural and community practices, resources, experience, and information infrastructure work together" (Star, Bowker, and Neumann 2003: 257, their emphasis). In order to analyse transparency as the result of a complex set of relations, they suggest one must answer the following questions:

"-For whom and when is a particular tool transparent?

-What happens when degrees of transparency are different for various subgroups of users?

-How does something become invisibly usable at [an organisational level rather than an individual level], and what differences are required in process and design content?

-How are new comers taught to make the tool, interface, or retrieval system transparent for themselves?" (Star, Bowker & Newmann 2003: 242-243)

Transparency is therefore closely tied to one's ability to exert power when working with technologies. It arguably embeds relations of power into the practices of designing and using ICTs. The disconnect between the transparency of a standard and its classification as an art world convention therefore becomes a relational marker of appropriation. Returning to the RTMark example, this means that although their websites subverted design standards for websites, the standards of the HTML code used to produce the sites, for example, remained transparent. HTML code therefore also constitutes a transparent art world convention in this example. Becker conceptualises technological change in an art world as dependent on whether or not it enables the coordination of art world activity (see section 2.2.2). Although the RTMark example reproduces aspects of maverickness through the contention of design standards, it is also dependent on a number of successful new media standards/art world conventions such as HTML in order to circulate.

It is at this point that a conceptual tension alluded to in the previous section (2.2) - innovation as an artistic practice and the qualities of the author as an innovator or maverick in contrast to the diffusion of technological innovation across multiple social worlds - becomes more apparent. An artist conducting maverickness within an art world network, when working with ICTs, encounters a different set of contestable conventions which, in this research, will be identified as standards. The question is how maverickness is deployed by the artist in the case of new media standards? Based on this conceptualisation of standards and classifications, we now have a conceptual framework for understanding how art worlds and new media social worlds can come together. But just as section 2.2.2 unpacked the role of the artist within an art world, I now turn to two roles within new media art worlds.

2.3.4 The designer and user relations

Following the conceptual bridge between art worlds and new media social worlds, there arises the risk that a kind of art world equivalency emerges in which artists necessarily equate to some corresponding new media role. This section will therefore categorise and discuss two roles within new media social worlds – the designer and the user – in order to address this matter head-on.

One could argue that the role of the designer in new media is analogous to other producer roles: a role similar to that of the artist role in production of culture in that it is attributed to and performed by the producer(s) of an artefact. As with the artist role, the role of a new media designer can also be distributed among multiple actors who contribute to the different necessary steps involved in the production of a technology (Suchman 1999, 2002) which in turn is distributed in the market. Robin Mansell describes design as embodying "the traits of intentionality and purpose and, therefore, of the capability to initiate, as well as constrain, action" (Mansell 1996: 23).

This definition of design provides an important contrast to the production of culture tradition's understanding of cultural production: the distinction between a designer and artist is their role in defining the use value of the resulting cultural product. The artist role is concerned with the production of meaningful artefacts for an art world whereas the designer role is concerned with the initiation and constraint of actions that lead to the production of meaning. Both may depend on support personnel to accomplish these tasks or to facilitate the distribution of the cultural artefact (see Mackay and Gillespie (1992) for a case for marketing as transition between designer and user in new media). The designer role constructed within new media social worlds may be concerned with the production of meaningful standards (Norman 1999), but this production is one that is concerned with producing or reducing levels of transparency of standards relating to the user's work.

Much debate has taken place around where the user is to be located in the process of production or whether she/he is able to find a place at all (Suchman 2002). Extending the parallel to production of culture, the user role is comparable to that of the audience or consumer of a technology. Similar to Peterson's later revision of audience work (see section 2.2.3), the definition of the user role here is not as a powerless actor subjected to the constraints of ICT design. Rather, the role consists of one who chooses to conduct/contest the designed actions in time and space and who can attempt to actively reinterpret their freedom and constraints through articulation (see Bowker and Star 2000: 310-312, see also Silverstone (1994), du Gay et al. (2003) and section 2.3.5 below) . In this definition, the user role could also be attributed to the artist who selects technologies to produce artworks.

Both definitions therefore suggest a degree of freedom that produces the potential for relations of power as developed in sections 2.2.3 and 2.2.4. Returning to the contingent construction of the artist role, groups of artists, when engaging with a new media social world, face the task of defining and/or being defined in relation to both roles. This more nuanced designation of artists as designers and users broadens the conceptual field for understanding selection of tools or materials based on its useful properties and as the articulation of meaning,

what Zelizer (2005: 332) describes as the properties of consumption. By choosing to use an ICT, the user is also consuming the ICT for a varying degree of functional return and meaningful expression. Meaning and use-value are closely intertwined yet still distinguishable. A social actor's reasons in selecting an object of consumption are not necessarily purely rational nor purely affective. Though Bakardjieva (2005) distinguishes between use and consumption, choosing the former over the latter, it is arguably preferable to keep both use and consumption as considerations for user activity.

This observation is significant for this study because it suggests that the artist's appropriation of tools and materials such as ICTs does not necessarily begin and end with use. Rather, it is potentially a messy combination of design and use in which both the internalization and externalisation of the meanings of goods takes place individually and collectively (Spittle 2002, Ilmonen 2004, Zukin and Smith Maguire 2004). Just as artists have a mix of reasons for choosing their profession (Menger 1999), the way they choose and use tools may be a combination of rational and meaningful, personal and collective. Similarly, it is unlikely that such choices can be mainly attributed to an individual choice or solely to prevailing collective norms. In choosing a particular ICT, an artist initiates a meaningful yet contingent relationship that may or may not initiate a whole new set of choices. Returning to 'production of culture's conceptualisation of the artist's role and its relationship to technology, it seems the artist can perform both the designer and user roles: like other social actors, the artist may be a designer or a user of the technology depending on the stage in which he/she is engaged in that technology's development (Suchman 1999). Should the user and designer roles be conceived as being at opposite ends of a new media spectrum or as opposites of the artist role? If the artist role as producer is dependent on its distinction in practice from others, can an artist role be articulated within the framework of a user, or rather, is there in fact a struggle to find a designer role?

I would therefore argue that the challenge with the 'production of culture' model when examining technological innovation for cultural production lies in its conceptualisation of the artist as a user of technologies that are devoid of meaningful use-value outside the art world in which it is used. In this study, the ways the user and designer roles operate are considered as relations of power that operate on different levels of transparency of ICT standards and that articulate the artist role when dealing with ICTs. The objective of the empirical research is to observe how the artist role also conducts the role of designer and user in order to create new media art; to see how these roles are part of a new media artist's career.

Now that a conceptual framework exists for social worlds of art and of new media and an understanding of agency within these worlds, the following section turns to a more in-depth

formulation of mediation as a means of understanding the dialogical power dynamics of enculturating ICTs. This section argues for mediation as a way of understanding the contingent work of designing and using, articulating and consuming ICTs across social worlds.

2.3.5 Mediation of ICT artefacts within social organisations

Until now, the focus of this section of the chapter has been to develop a conceptual model for the unstable relationships between individuals and technologies that frame their activities relating to new media. One of the main challenges left unattended to is the way in which collective relationships affect and/or are affected by ICTs. This suggests the need to focus on the 'dynamics of uses' (Martin-Barbero 1993), the shifting roles that individuals and organisations play as producers and consumers while trying to acquire or maintain relations of power with the help of technologies and over the design and use of these technologies. The concept of mediation provides a means of understanding how actors affect and are affected by the technologies they work with. This section will define a particular understanding of mediation and employ it to analyse the negotiation of power relations surrounding the enculturation of ICTs in social worlds.

One way to observe the mediation of/by technologies within a social world is by following the career of a technology (Silverstone and Haddon 1994, 1996) or what Kopytof (1986) calls the cultural biography of things. Careers are endeavours to follow the shifting meanings and uses attributed to a technological artefact through time and space. Rather than instil agency to an artefact as one would in the actor-network theory (ANT) tradition (Callon 1986, Latour 1996), instead the concept of careers generates a fluid framework for understanding a technology's changing place in society as a cultural commodity. One fertile social world for the study of collective mediation of ICTs over time and space is the family (Silverstone et al. 1991, 1994, Silverstone and Haddon 1994, Bakardjieva and Smith 2001, Lally 2002, Lacey 2007). Silverstone and Hirsch (1992, see also Hirsch 1994) use the family as a basic social unit to study how ICTs, specifically televisions, are appropriated into family life. They describe the process of the technological artefact's transformation of meaning and use over time as the 'domestication' of the television (see also Lehtonen 2003 for a more actor-network inspired approach to domestication). Their objective was to demonstrate how family members as users/consumers are active participants in the social construction of a technology (Silverstone & Haddon 1996: 59). Technologies are not simply designed and blindly consumed by individuals. They argued that ICTs are actively appropriated by individuals into sites such as the household where its meaning fluctuates and its usage changes over time.

This is understood as a process of mediation, a process in which consumption and production are performed by actors in order to enculturate an ICT. Understanding this process as media-

tion enables an examination of both the meanings generated, as well as the use functions, and their development over time and space. Silverstone conceptualised mediation as "a fundamentally dialectical notion" that understands communication as "driven and embedded" (Silverstone 2006: 189) by discourses and technologies. Mediation creates a kind of recursive stratification of social dynamics in which different social worlds, individuals, discourses, and the properties of the ICT mediate each other over time. Silverstone and his colleagues recognised that mediation is itself grounded in the specific preoccupations of the related social world. Because of this specificity, they classify the mediation work performed in the family home as domestication. The term domestication describes a dialectical process in which both the technological artefact and the family members who use it transform each other through daily use. This process includes the ICT's design which they designate as commodification, the ICT's appropriation by the group of users in the home, and the ICT's conversion which designates the group of users' work of representing the ICT to other social groups. Domestication is the 'taming of the wild and the cultivation of the tame' (Silverstone and Haddon 1996: 60):

"In this process new technologies and services, by definition to a significant degree unfamiliar, and therefore both exciting but possibly also threatening and perplexing, are brought (or not) under control by and on behalf of domestic users. In their ownership and in their appropriation into the culture of family or household and into the routines of everyday life, they are at the same time cultivated. They become familiar, but they also develop and change." (Ibid: 60)

The concept of domestication implies securing the object in order to make it familiar and docile in time and space, safe within the familial hearth. It is a particular kind of mediation that is composed of the particular discursive practices of the familial social world as well as those of television as part of a wider social world. Silverstone and Haddon go even further to describe television as doubly articulated: as a meaningful artefact and as carrier of the meaningful artefacts it delivers through its programming. These articulations are the result of the users' engagements with the technology. Negotiating the double articulation may be crucial to the artist as a social actor: choosing the artifact in order to produce content but also choosing the artifact in order to remain an empowered producer of content, a kind of expert domestication of the ICT. Part of the process of domestication is an ongoing relationship with the outside world, between what is "normal" and what is "new". Domestication, therefore, is a situated mediation that bridges two social worlds, that of the television medium and its related designers with the family as a group of users. It underscores how the work of mediation is not undertaken in a social or technological vacuum. The relationships between the participants, technologies and discourses are not pre-determined but nor are they a blank slate.

Applied to this research, mediation generates a dialectically situated kind of work instead of a linear understanding of work that separates production/design from use/consumption. Such an understanding of mediation may shed new light on the liberty of action afforded to artists when using ICTs in an art world network. This model could lead to a conceptualisation of consumption and production informed by situated roles and interests that work with and against the flows of technological development: an exploration of art and its relationship to the tools used by artists. In order to develop such a model, the first objective must therefore be to map out the characteristics and qualities of mediation of the ICTs as both meaningful and functional artefacts for the production of artworks and the social topography in which it is set.

In the case of television as an ICT, Martin-Barbero sees everyday life in the family home as one of the 'places of mediation' (1993: 215) where mediations of 'the social materialisation and the cultural expression of television are delimited and configured'(Ibid: 215). Silverstone and Haddon argue that examining the use of ICTs within the fabric of everyday life in the home provides a picture of 'their significance in shifting, extending, transforming, or undermining the boundaries that separate our private from our public lives (Meyrowitz 1985)' (Silverstone and Haddon 1996: 61). The family home is established as the site of the social world in which an ICT circulates:

"Households are conceived as part of a transactional system of economic and social relations within the formal or more objective economy and society of the public sphere." (Silverstone et al. 1994: 16)

Appropriation of commodities such as ICTs into a domestic social world takes place, it is argued, within the household. Like the home and everyday life, spaces in which individuals and organisations appropriate ICTs have ties to discourses that contribute to the mediation process. One must therefore consider the physical and organisational space containing the process of mediation as a discursive space (Silverstone 1998). It is in this physical and discursive boundary that the initial challenge outlined in section 2.1 resurfaces: how culture is conceptualised for the purposes of this research. This research focuses on an art world network rather than a family or a household. In order to apply the model of mediation, it is necessary to ensure that the research does not incorporate a definition of culture that is itself "domestic" – shielded to a greater or lesser extent from the public life by the walls of the family home. Just as Silverstone (2006 A) sees the initial flaws in the family as a unit of analysis, not being an entirely homogenous repeatable unit, the network under examination and the objects it contains in this study are 'messy'. Nor does the art world network necessarily benefit from the same historical or social pedigree as the household. Crane does, however, identify art muse-

ums and galleries (1987: 119-136) as fertile spaces for art world network activity and for the dialectical negotiation of art world power[10].

Sections 2.3.1 and 2.3.2 have already argued that, for artists, the spaces in which they engage with ICTs may not necessarily provide clear divisions between the 'expert' and 'leisure' or domestic sphere. On the most basic level, an artist may use the Internet from a home computer as an everyday user to email family and friends and yet still use the same connection to produce artworks. Conversely, the artist may have a day job that demands a different kind of expert use of ICTs which he or she could also use in his/her spare time to produce artworks. Finally, the artist may use a computer from the home to produce artworks. This may be particularly the case for media artists who do not have access to many resources. In some cases, ICTs are cultivated by artists to be used in expert social worlds, while other artists may believe they are better suited for the 'domestic' or 'leisure' world. Such spatial distinctions only represent one of the many potential fault lines where meaningful power relations mediated by ICTs could develop.

Ignoring the properties of the discursive spaces that surround an ICT's appropriation overlooks power inequalities between the offline and online that are not predetermined. Social work is mediated by discursive spaces such as the home or, in the case of an art world example, the museum or gallery or university. This unevenness creates an added dynamic to the process of appropriation which suggests that we need to map the discursive spaces of the artist when engaging in a process involving mediation and ICTs. What we learn from mediation theory is that spaces and their related discourses that shape how social work is conducted are integral to an understanding of the appropriation of ICTs into a social world.

2.4 Art world networks and networked art worlds

Having established a framework for understanding how artists might go about appropriating ICTs for the production of artworks, it is time to develop an understanding of the properties of ICTs. In the case of this study, the interest lies in digitally interconnected information networks. To understand their properties, it is necessary to first consider the term network.

The network's application as a concept in the social sciences raises certain conceptual and methodological challenges. Leaving methodological issues to the next chapter, this chapter turns to the theoretical implications of the term network. The term network is relatively consistently used in the literature to describe a structure made up of links between nodes (Barabasi 2003:11-13). Networks have been used in many different ways to describe relationships in

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[10] Section 2.4 will clarify how the 'network' in the form that it is similarly employed here to the 'school' or 'circle' or 'simplex' will also be employed in a way that is adapted to the particularities of new media.

the production of cultural artefacts: in anthropology (Gell 1998), in aesthetic theory (Bourriaud 2002b), in the sociology of art (Becker 1982: 35, Crane 1989, Bourdieu 1993: 30). The concept is also employed more generally in sociology such as actor-networks (Hennion 1989, Law and Hassard (Eds.) 1999), social networks (Wellman et al. 1996, Wellman 2001, Neff 2005) and network inspired social theories such as the network (or information) society (Castells 1996, 2000). The concept can describe infrastructure such as international transportation networks (air travel, rail, etc.), telecommunication networks (Internet, phone, etc.). It has also been used to analyse various structures from biology (neural networks) to computer sciences (network flow theory). What is clear is that the network metaphor has served many different disciplines, including the social sciences:

"Networks seemed to hold the potential to combine the explanatory power of "culture" while being able to account for human agency in ways which structural-functional theories of social life were unable to do." (Knox et al. 2006: 124)

Becker's approach (also see Crane(1987), White and White (1965), and Bourdieu (1993)) is to employ conceptual structures such as art worlds to examine and compare relationships that lead to innovations in cultural production and consumption. Crane (1989) for example, compares three art world networks of painters, their ideologies, their social standing and relations, and the works that they produce, to generate a set of dialectical relationships that constitute an art world structure which can itself be compared to other art worlds in history (see section 2.2.5). Networks in these cases become not only means of analysing artistic innovation but also means of conceptually representing innovation.

Because the term network is so widely used in such varying circumstances, it is necessary to qualify the use of the term network as embedded in culture and mediated/mediating relations of power. It is important to recognise that the term is already situated within the object of research and not applied 'from the outside' as a theoretical meta-structure. Many metaphors have been applied to communication networks such as the Internet in order to frame discourse around the appropriation of such technologies (Zook et al. 2004), the super-highway (Sawhney 1996) being an early favourite. One can therefore not assume that artists are precluded from using networks in a similar fashion. Artists' use of the term implies a certain amount of reflexive interpretation on the part of art world actors and should not be taken for granted in terms of the meaning or implications in this research. In this research I examine the extent to which the classification of the network therefore is not only produced by gatekeepers and the "outside" by theorists and sociologists but also by the artists themselves.

In recent articles, some have argued that networks have not been applied consistently within the social sciences (Urry 2004, Knox et al. 2006). Although the word 'network' is somewhat inconsistently applied, generally, it does seem to preserve some basic elements: units (nodes) joined by relationships or links (Castells Forthcoming). Two significantly different applications of the term 'network' are relevant in this research: 1) digital information and communication networks, and 2) art world networks. The following section will employ Manuel Castells' interpretation of networks and its relevant power relations to help define how the research addresses both.

2.4.1 Digital information and communication networks vs. art world networks

In The Rise of the Network Society, Castells argues that the development and diffusion of ICTs are key ingredients for the development of what he calls the Network Society:

"While the networking form of social organisation has existed in other times and spaces, the new information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure." (Castells 2000: 500)

These social organisations can therefore grow larger and more stable thanks to the rapid feedback loops (Castells Forthcoming: 51) enabled by ICTs. Castells goes on to include a multitude of networks from the "network of global financial flows" (2000: 501) to "television systems, entertainment studios, computer graphics millieux, news teams, and mobile devices generating, transmitting and receiving signals in the global network of the new media". Such a broad and diverse classification at first provides little empirical direction. It does, however, support the notion that ICTs are not separate from socio-cultural processes but deeply embedded in them through a dialectical process of mediation (see section 2.3.5).

Nevertheless, technologies have certain properties – what some call affordances (Gibson 1977, Norman 1999, Gaver 1991) – that shape the physical limits of how they can or cannot be designed or used. Digital information and communication networks are no different. Castells identifies "multidirectionality and a continuous flow of interactive information processing" (Castells forthcoming: 52) as necessary but not sufficient preconditions for making digital ICT mediated networks a potent organisational form in contemporary society. These ICT features enhance networks, he argues, because they combine with the network properties of flexibility, scalability and survivability.

"Flexibility: the ability to reconfigure according to changing environments and retain goals while changing their components, sometimes bypassing blocking points of communication channels to find new connections. Scalability: the ability to expand or shrink in size with little disruption. Survivability: because they have no single centre, and can operate in a

wide range of configurations, networks can withstand attacks to their nodes and codes be-cause the codes of the network are contained in multiple nodes that can reproduce the in-structions and find new ways to perform." (Castells Forthcoming: 52-53)

Digital information and communication networks are therefore defined in this research as technologies that enable and constrain the multidirectional and continuous flow of interactive information processing based on classification/standards. In the case of this research, they are not imbued with agency. Rather, their supporting role is understood as part of the mediation process described in section 2.3.5. Their discursive articulations and technical transparencies can at once enable and constrain the work for which they are designed and used. They are socially situated carriers and enablers of meanings and functions through time and space.

In the case of art, the network is employed to qualify the art world model in general as well as the specific properties of an art world network (section 2.2.5). A history of the term 'art world' is also arguably a contemporary history of the application of the network within contemporary art. Recent use of the term 'art world' dates back to the 1960s and it is commonly attributed to Arthur Danto (1964), a New York art critic and philosopher. It was used at the time to describe aesthetic changes taking place in contemporary art. It has since been appropriated by Becker and Crane (and others) who use it as a type of network (Becker 1982: 35, Crane 1989) for explaining change and innovation in cultural production. Networks describe the set of conventions that enable the coordination of an art world. It arguably implies dissembedded-ness or contingent ties that enable the art world actors and conventions: nodes in a network are atomised, distinct from each other, held together by the contingent links of conventions.

Crane's art world network model depends to varying extents on technologies to inform the boundaries of its investigation. However, art world networks cannot simply be treated as an equivalent to Castells' or anyone else's use of the term network[11]. The parallel between the two is the conceptualisation of dynamic links between varied people or things. The term in Crane's sense is used to analyse our fundamental understanding of artworks and the work of making and appreciating art within social worlds, particularly as it pertains the coordination of art world activity among disparate groups and how it is partly dependent on the infrastructural relations that enable and constrain said work. This is different from a collection of ICTs that are connected using standards and protocols in order to communicate and deliver information.

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[11] Castells's second trilogy volume, The Power of Identity (2004) deals with small networks for contention but unfortunately does not deal specifically with art world networks. This is arguably due to his conceptualisation of contention as political resistance or protest in which cultural production is subsumed (2004: 419-428).

2.4.3 Network power and art world networks

Whereas Becker's symbolic interactionist–inspired model is a conceptual and methodological choice that enables the analysis of producing, distributing and appreciating meaningful artefacts, Castells argues that social networks supported by ICTs exhibit four specific means of exercising power (Castells Forthcoming 85-93):

> *Networking power* - This is defined as the power of those individuals or groups who have access to networks over those who are excluded from these same networks.

> *Network power* - This is defined as the power of standards in that the cost of coordination decreases with the number of actors who comply with a standard. Conversely, as the number increases, the possibility of substituting this standard for an alternative decreases.

> *Networked power* - This is defined as the interdependence between networks for sustaining power.

> *Network making power* – This includes two form of agency: the programmers: the ability to constitute networks and to program/reprogram the network(s) in terms of the goals assigned to the network and the switchers: the ability to connect and ensure the cooperation of different networks by sharing common goals and combining resources.

In the light of this, in this study, the challenge is to determine whether or not these relations of power apply in the process of mediating digital ICTs in an art world network. All four forms of exercising power arguably present interesting consequences for both the work surrounding the transparency of classification/standards as described by Bowker and Star in section 2.3.3 and for the conduct of maverickness for artists in the process of mediation. It can be argued that, as an ICT's standards are appropriated by a larger number of users, the design gains greater network power and these same users continue to benefit from an increase in use. But such a power relation potentially comes into conflict with the artist conducting maverickness and the objectives of an art world network. By this reasoning, it appears that an art world network that contests network standards engages in a self-defeating exercise. On the one hand, contesting network standards reduces network power thereby limiting the number of potential users. On the other, accepting network standards and the increase in users reduces the opportunities for contention, thereby constraining the artist's conduct of maverickness. This challenge can be met by several solutions: 1) maverick artists may simply accept network standards and concentrate on developing other kinds of contention. This option would arguably make networks a relatively transparent infrastructure for the production, distribution and/or consumption of artworks. 2) artists may attempt to contest network stan-

dards. Research suggests that some have already chosen this last option. Work by theorists such Stallabrass (2003) and Galloway (2004) documents how media artists engage in a constant struggle to distinguish themselves from the network standards they believe to be imposed on them by larger economic, technological and political flows[12]. For this second option, networks become a pivotal aspect of the conduct of maverickness. This in turn begs the question: are maverick artists able to rearticulate the contention of network standards in a way that can be leveraged into sustainable work? If so, how and to what degree is it successful? The answer to this last question is essential as network power represents a potential danger to maverickness: successful standards decrease the likelihood of contention in the same network. This overall quandary echoes the danger of exhaustion for art world network activity identified by Crane in section 2.2.5. Nevertheless, just as Avant-garde artists were able to leverage the contention of everyday life into art world conventions, artists who conduct maverickness may be able to do the same for network standards.

The aim of the study is therefore to better understand the process of mediation of the network by artists as a means of socially and technologically organising roles of design and use in an art world network. My intention is to observe how artists stay afloat in the face of technological, economic, and cultural change, while attempting to chart their own direction with each new wave of development. If the network is employed by researchers to study innovation and the transformations of social and technological conventions among artists, then it seems possible for artists to appropriate it for themselves with the same aims in mind.

The research will observe the socio-technical relationships that networks enable, the liberty of action they provide, between artists, other art world actors and ICTs. The application of the network in this context may be directed to the potential for change and freedom of artistic work. As Silverstone and Mansell state: 'the power that is held is constantly shifting as institutions and individuals manoeuvre to gain maximum leverage on electronic spaces and markets, both in public and in private' (Silverstone and Mansell 1996: 214).

2.5 Conceptual framework

As indicated in the introduction to this study (chapter 1), my principle question is: How do artists design and use digital information and communication networks for the production of

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[12] The notion of 'flows' as movement within stable networks has also been used by Castells to describe 'purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors in the economic, political, and symbolic structures of society'(Castells 1996: 442). Similarly, Urry employs the analogy of 'global fluids' which describe the 'unpredictable mobilities of people, information, objects, money, images and risks' (Urry 2000: 194) that do not necessarily have a fixed point of origin moving in and out of global networks.

artworks? In order to develop a conceptual framework to answer this question, in the preceding sections I have considered a number of theoretical approaches located within the traditions of the 'production of culture' and 'mediation theory', critically assessing them in terms of how they might be integrated and applied in this study. In this section, I summarise these theories to demonstrate how they can be used to not only further refine the principle question into a set of research questions, but also form a conceptual framework which will facilitate and guide the empirical work in this thesis. The framework presented below consists of three interrelated sub-frameworks, the components of which will be operationalised in the methodology chapter which follows.

Firstly, building on the works of Becker, Peterson, and Crane, in combination with a conceptualisation of discursive conduct as developed by du Gay, I have provided an understanding of how artists are enabled and constrained by relations of power in an art world network. Below are two diagrams that illustrate a schematic representation of this aspect of my conceptual framework. In Figure 1 the artist (circle "A") is conceived as working within a wider art world network constituted by a number of other art world actors (circles "B" through to "G"). They are linked together by conventions and discourses (conventions "a." and "b." as well as discourses "c." and "d.") that enable and constrain the production, distribution and appreciation of artworks.
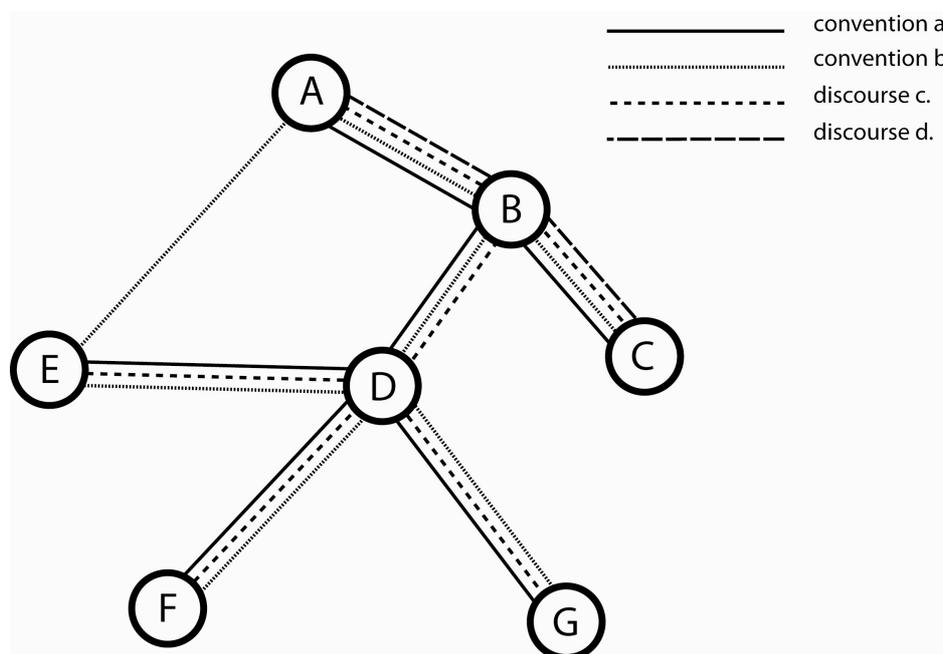
Figure 1: Diagram of an art world network

In order to (re)produce relations of power within an art world network, the artist may engage in 'maverickness' by contesting one of the established art world conventions, for example

convention "a.", or by producing an entirely new convention (see figure 2, convention "e."). This does not mean that convention "a." necessarily vanishes from the network after the artist's contention, or that convention "e." is necessarily innovative, or that the artist stops (re)producing other art world conventions. The artist is understood to articulate this conduct to other art world actors in order to represent him/herself as a maverick. An individual's articulation of maverickness is understood here as a way to produce relations of power that support the conduct of the artist's role within an art world network. Theoretically, the individual artist may be able to capitalise on this contention/production to construct a role as an innovative maverick within the art world network. However, there is also the possibility of contesting/producing the 'wrong' conventions, i.e. conventions that are not well-received by other artists in a network, in an untimely way or worse yet, contesting/producing conventions without being noticed).
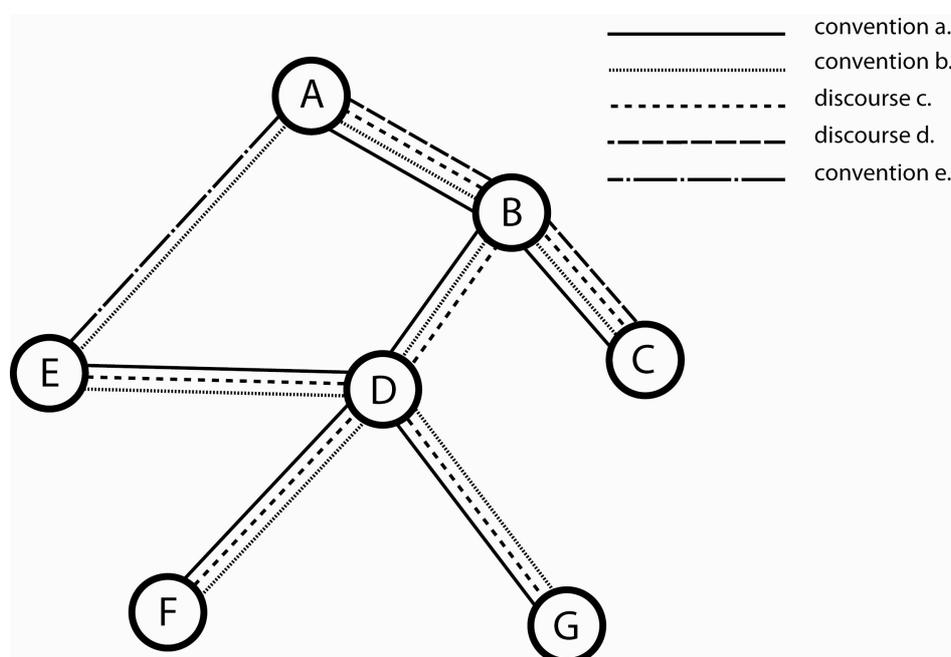
Figure 2: Diagram of an art world network following the conduct of maverickness

Understood in this way, we can now refine the overall research question into the following research questions:

I) Do artists articulate a conduct of maverickness in relation to networked ICTs? If so, how is it articulated and what are the resulting power dynamics for the production of artworks?

On its own, this framework does not sufficiently address how technologies, in this case new ICTs, are appropriated over time within the art world network. To address this, I turn to 'mediation theory', drawing upon Silverstone's conceptualisation of mediation, to present a par-

allel and, as I will show, interrelated framework that is broadly defined as a process of mediation (represented in figures 3-5). In this modified and extended framework, ICTs are understood to constitute a number of standards for new media social worlds. These standards, created by designers, are conceived as enabling and constraining artistic work between actors across their social worlds (figure 3).
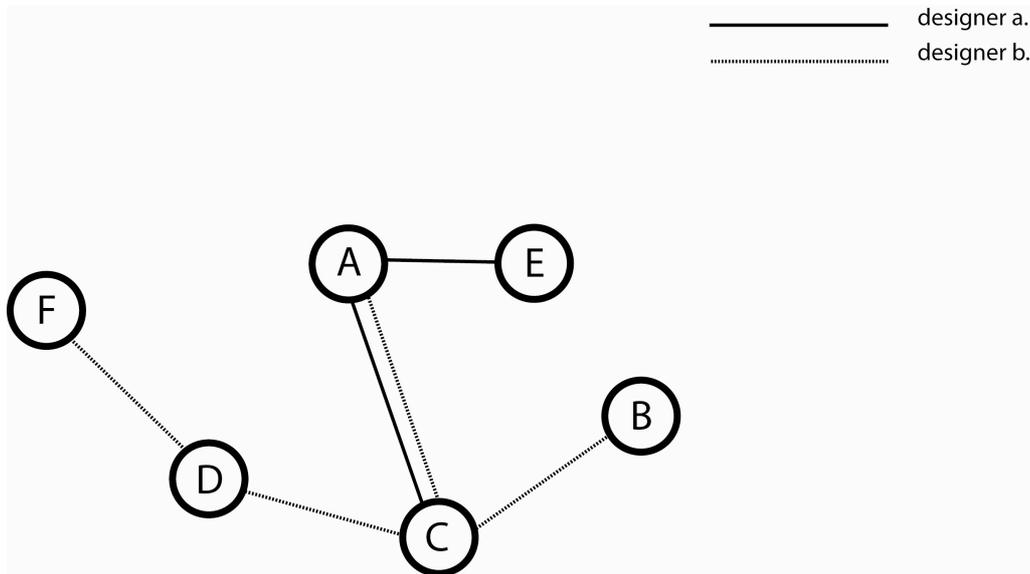
Figure 3: Diagram of the design phase of an ICT

Once designed, these ICTs move from the design phase (drawing on the example of domestication, what Silverstone designates as the commodification phase), into discursive spaces where they are appropriated by users. Figure 4 illustrates how, on the one hand, certain standards designed by the designers may remain transparent to the users (for example standards "E" and "B") while, on the other hand, some standards may be articulated by users explicitly (for example "A", "C", "D", "F") for situated use within the discursive space.
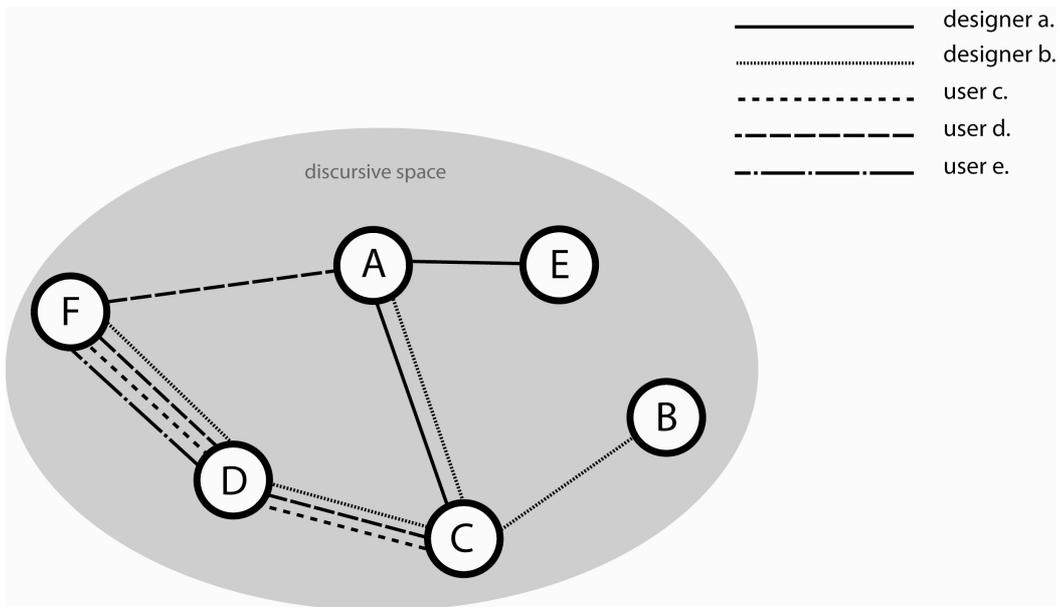
Figure 4: Diagram of the appropriation phase of an ICT

In this process, in a third phase (figure 5) it may be that users convert or re-categorize the standards as part of the mediation process. In the case of artists' work with ICT standards, I understand this last phase as part of the work of classification in which standards are classified as conventions and vice-versa. It should also be noted that these phases do not necessarily unfold in a linear fashion through time but are interwoven with each other as part of a dialogical and contingent process.
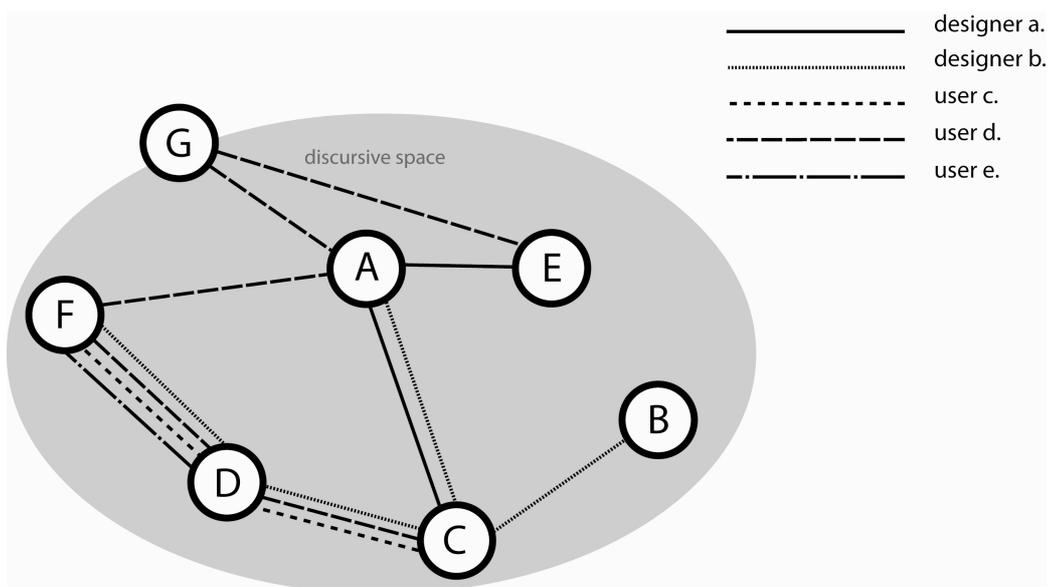
Figure 5: Diagram of the classification phase of an ICT

This second component of my conceptual framework enables me to ask a second set of research questions, further refining the initial overall research question:

II) How do artists engage with the mediation of digital information and communication networks? More specifically, how do new media standards become meaningful conventions for artists and their art world networks?

The differences between the figures 1 and 2, where nodes represent actors and links represent conventions and discourses, and figures 3 to 5, where nodes represent standards and links represent actors illustrate how these two conceptualisations are the two sides of a same coin. The set of standards "A" to "G" represented in figures 3 to 5 could be regarded, for example, as convention "e." in figure 2. Conversely, the artist "A" from figures 1 and 2 could be regarded as designer "a." and/or user "d." in figure 5. Within this framework, it is in the recategorisation phase, when the artist or other art world actor classifies conventions/standards that one can move between the two models. Overlooking the dynamics of one in order to focus on the dynamics of the other would result in a conceptual problem. When viewed in isolation, each side tends to reinforce a seemingly irreconcilable understanding of culture: the former focuses on the expert producer of culture and the latter on a culture of users and designers. But the combination of both, when applied to digital information and communication networks, arguably presents the study with a new puzzle. I illustrate this problem using a sixth figure below. Here we return to a network of actors connected, in this case, by a digital information and communication network based on Castells' conceptualisation of network power. As developed in section 2.4, by contesting or attempting to produce new network standards through the conduct of maverickness, the artist may face the possibility of diminishing network power. Maverickness, a discursive mode of conduct that represents at once a constraint and a potential source of power for artists, may become diffuse or indiscernible from the roles of other actors in relation to technological change in ICTs. Inversely, artists may adapt their articulation of the conduct of maverickness in a way that enables them to contest or ignore established new media standards, thereby elevating the role of the maverick artist to new positions of power.
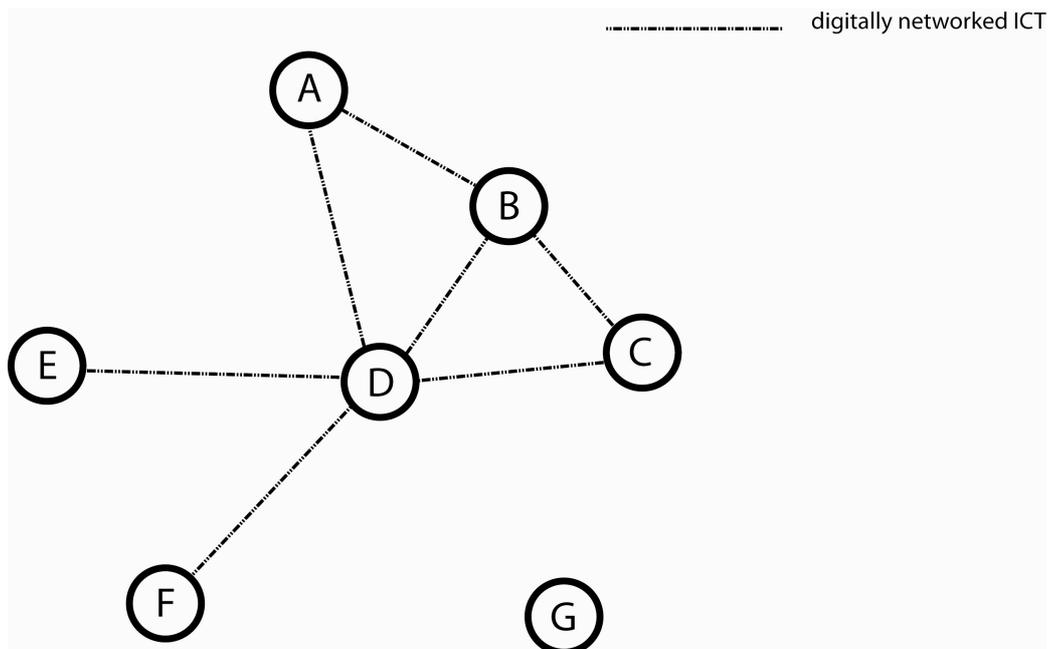
Figure 6: Diagram of an art world network connected by a digital information and communication network

This tension between the combinations of both conceptualisations can be summarised by asking a third set of research questions:

III) Does the mediation of networked ICTs by artists in some way enable or constrain the (re)production of maverickness in an art world network? Specifically, are artists able to conduct maverickness in order to contest network standards?

Conventions and standards, it is suggested here, are useful concepts for understanding the situated work of art world actors in mediating ICTs for the production of artworks. Rather than the apparently inward oriented process of domestication of technologies to render the new familiar (see section 2.3.5), artists working within art world networks arguably emphasize the 'outward' mediation of technologies in order to generate fertile ground for the production and consumption of meaningful artworks. This can be understood as including, but not limited to, the diffusion of ideas and technologies among actors. Three types of work have been identified in this conceptual framework: articulation, mediation, and classification. These three forms of empirically observable work enable the study to problematise activities conducted by the three roles developed in the research question – the artist, the designer, and the user – and observe how they relate to each other and to ICTs through artists' collective work. The framework is also suggestive of two ways in which power is (re)produced – the artist's conduct of maverickness and network power – the former is used to understand one of the

ways in which artists employ conventions to produce relations of power in art worlds. The second is used to understand how networks as organisational structures and technologically mediated infrastructures influence social activity. What remains to be assessed is whether these productions of power relations can co-exist within this framework.

In this study, I conceive of artists as 'cultivators of culture': nurturing and pruning conventions and standards while also weathering the changing flows (Castells 1996: 442) of society, culture and technology. The situated and collective design, appropriation and conversion of networks by art world actors therefore cannot be taken as a forgone conclusion. In this complex series of interlocking social worlds, the circulation of power among individuals, groups of individuals and technologies becomes all the more unpredictable.

Both theoretical traditions, 'production of culture' and 'mediation theory', place the ICTs as dialogically contributing to the shape of the cultural content produced. They also use the idea of trajectories, in the case of the artists' careers and in the case of the technological careers, which I suggest can be employed as a means of understanding the changing relationships between individuals, ICTs, the social worlds in which they are designed and used, and the meanings that inform such relationships. The production of culture tradition as understood in this study brings to this conceptual framework the means to analyse the role of the artist within an organisational structure, including its technological aspects, as central to the power relations that enable and constrain the production of artworks. The 'Mediation theory' tradition, again as understood in this study, brings a more elaborate model of consumption and use and a clearer understanding of the process of integrating networks within socio-technical organisations and how they are then transformed by these technologies. When the two are combined they provide the basis for a conceptual framework that can be operationalised as set out in the next chapter.

In order to understand how artists privilege certain ICTs for the production of artworks, it is important to view the artist as not only an actor who uses conventions to produce artworks, but also potentially as a designer and user/consumer of such conventions in the sense elaborated above. This folds the conceptual distance between the producer and the consumer in on itself in order to study the process of cultural production and consumption and it also provides a theoretical model of an art world actor, in this case, specific to the new media artists, as being both producer and consumer of cultural goods and practices. The artist is not considered as the sole source of production but as conducting a working relationship with technologies and other social actors where the artist's role fluctuates between designer and user. In other words, in this conceptual framework the artist is viewed as a socially constructed form of

agency: one that is dependent on power relations linked to supporting personnel, technologies and discourses.

The user/designer opposition (Suchman 2002) is not used here to study how the meaning of a cultural product travels between a distant producer and an active audience but rather to explore the power dynamics centred on a particular type of social actor, i.e., the artist as a member of an art world network. Each convention is therefore understood as being embedded within a complex set of variably transparent and interrelated conventions and standards which are consumed/used and produced/designed by artists and other art world actors.

By observing how art world conventions are linked by artists to the design and use of ICTs, we can begin to understand the successes and failures in such a process of development. It would be difficult to understand why these conventions are chosen in the first place if the importance of meaning tied to the conventions that allow production or consumption of content is minimised. Certain conventions may be cheaper in terms of resources or more efficient in terms of attaining interest but they may also be meaningful in different ways to those who choose to use them. One could argue, in addition, that choosing an art world convention for artwork creation because it is cheap or efficient is itself meaningful. Value judgements surrounding conventions in art worlds may also help to legitimate and define the cultural goods that are produced.

The aim of this research is to analyse the artist's articulation, mediation and classification of conventions and standards relating to ICTs within a networked art world network. The key dialogical relationships between actors, technologies and their organisational contexts have been identified as:

- the artist – an art world actor who produces artworks within an art world using conventions, who is able to articulate maverickness as a source of art world power, and who engages in the work of classifying standards as conventions.

- the ICT – a digital network that enables and constrains the multidirectional and continuous flow of interactive information processing based on variably transparent classification/ standards circulating within discursive spaces and across social worlds.

- the art world network - an organisational art world structure for the production, dissemination and use/consumption of artworks for artists based on the (re)production of maverickness

The dialogical relationships between these three are understood as being not only dependent on the production of cultural objects but also on the meaningful production and/or use of technologies such as ICTs.

2.6 Paths not taken

This chapter looks to a number of different theoretical traditions in order to develop a conceptual framework. Because of this interweaving, it may seem to some readers that a number of diverging theoretical paths are not taken. I now turn to an overview of some these theoretical options and why they are not retained as part of the framework.

2.6.1 Art world substitutes

The choice of an art world network and social worlds as models for the conceptual framework stands in contrast to other models used for similar research such as "cultural fields" (Bourdieu 1979, 1993) or "cultural industries" (Peterson 1982, see also DiMaggio 2000). The concept of field will not be employed in the research in a Bourdieuan sense of 'space of literary or artistic positions defined by possession of a determinate quantity of specific capital' (Bourdieu 1993:30) and 'prise de positions' (Ibid: 30). The choice is based on the notion that the researcher cannot know all of the dynamics of the field. Simply put, social worlds acknowledge that an art world network does not function with conventions or discourses that are entirely exclusive to it, nor are its conventions shared with all other social worlds. Conceptually, conventions related to work within an art world provide three distinctions from Bourdieu's conception of field: 1) Conventions enable the researcher to address technological change, something that is left underdeveloped in the cultural field. 2) Conventions are external to the individual's predisposed behaviour or habitus (Bourdieu 1979). Conventions are therefore susceptible to transformations or substitutions without negating either their influence on individual and organisational behaviour or on the cost that such transformations may entail. 3) The work of (re)producing conventions within an art world is not limited to the accumulation and leveraging of cultural, or any other form of, capital. This does represent a problem for critical analysis since it could lead to a minimisation of the importance of power relations. Vera Zolberg (1990), among others (Battani 1999 for example), explores ways in which both Becker's art world and Bourdieu's field might be combined in a productive way but does not provide a model which allows for exterior influences upon art world activity.

Although it does not sufficiently unpack the social power relations that enable and constrain actors within an art world (this problem is addressed in section 2.2.3), Becker's model seems more promising for the purpose of this research, particularly when applied to work that is not as historically and culturally well bounded. Art worlds are conceived as being more porous than fields (Becker and Pessin 2006) and therefore are arguably better suited to contingent

work practices. Such porosity is made all the more explicit in this study's conceptual framework, particularly as it pertains to classification which enables to transformation of conventions into standards and vice-versa (see above). Bourdieu's analysis of an 'autonomous' field, like French literature as being 'a veritable social universe where, in accordance with its particular laws, there accumulates a particular form of capital and where relations of force of a particular type are exerted' (Bourdieu 1993: 164), is overly compartmentalized and does not provide a model flexible enough to consider power relations that might not be negotiated with the same currency: be it cultural, economic, and/or otherwise. Arguably, developing a model of the field of new media that includes all forms of capital and variable positions would be of little analytical use because of how its standards can be applied to so many different social settings.

A somewhat closer model to art worlds than fields is the Communities of Practice (CoP) tradition as espoused by Jean Lave and Etienne Wenger (See Bowker and Star (2000: 294) who equate social worlds to CoP). Although the research touches on work among groups of specialised individuals, it is not expected to contribute to the vast field of CoP (Brown 1998, Wenger 2000) research other than peripherally. CoP focuses almost exclusively on micro-level practices and its transmission between individuals. Power relations involved in the (re)production of conventions and standards suggests trajectories of dissemination similar to learning observed in CoPs. Again, however, such a model depends on a relatively stable discipline – what I have developed as conventions, standards, and discourses – to which one may be apprenticed. As presented in this chapter, what remains uncertain or dynamic is the discipline itself.

Media ecology represents another model that could encompass this type of work. In this case, such a model would pose a decidedly more technological set of boundaries than the cultural field. Although section 2.3.5 constructs a working definition of space for the analysis of socio-technological arrangements, this research is not aligned with the concept of media ecology. The environment metaphor can, in some cases, lead to an overly technologically deterministic view of ICTs' impact(s) on society (Heise 2002). As is alluded to in section 2.3.5 and will be made clear in section 3.4.2, I refrain from overusing spatial analogies, particularly as this pertains to networks. Because of this, the chapter has also explicitly avoided developing Castell's conceptualisation of space of flows in order to avoid the risk of "black boxing" ICTs and how designers and users engage them. Similar to part of the argument presented above with respect to cultural fields, a conceptualisation of ICTs as environments does not leave enough room for contingency or inconsistencies that might occur given the mix of social worlds involved in this study.

2.6.2 Actor-Networks

Antoine Hennion employs a version of mediation inspired by Actor-Network Theory when studying musical activities. This involves ascribing the status of mediator to both humans and non-humans to study the processes of production and consumption among amateurs of music (Hennion 2001). His approach argues against the concept of convention and art world (Hennion 1989, Hennion 2001: 3, Fourmentraux 2004: 25) as a means of coordinating artistic activity. His work instead develops a model for the creation of an aesthetic experience through the combination of these many mediators. This offers a useful contrast to Becker's model in that it provides an arguably more persuasive explanation as to the 'why' of cultural production: rather than simply employing or contesting conventions, art world actors attain aesthetic gratification from the creation of 'dispositifs' in which artworks and other artefacts play a central role. (For a comparison between ANT's take on art and Bourdieu's sociology of art, see Albertsen and Diken 2004).) Hennion even goes as far as to draw clear social parallels between the functional effects of such dispositifs and those of drug use (Gomart and Hennion 1999). It could therefore be argued that Hennion develops the artist's role in another direction, one where the art world actors and objects share the role of mediating instances in order to produce an aesthetic experience. But the Actor-Network model seems to minimise the meaningful aspects of objects, if not taking them out of the equation completely (Couldry 2004). Such a model also presents problems when addressing collective activity because it blurs the distinction between artefact and content and makes the power relations that discursively enable and constrain such practices difficult to identify. The problem is highlighted in Fourmentraux's research on new media art which is directly inspired by Hennion's model of mediation (Fourmentraux 2004). In it, power relations influencing the division of roles which in turn inform the choices made by the artist, support personnel, and audiences in relation to the technology remain unclear. Although some of the actions involved in defining roles is presented (Ibid: 40-43), their definition and implementation is entirely left to the actors' direct performances rather than leaving room for explicit or implicit socio-historical defined forms of conduct that inform work in the art world in question.

It should also be noted that Hennion's (2001: 3) main critique of Becker's art world model, is that it privileges social relations as its analytical focus to the detriment of the artworks that constitute the very purpose of such work. Though this may be true in the case of musical appreciation (as is the case of his research subject), in the case of artworks produced using networked digital ICTs, the coordination of social relations are likely to constitute a key aspect of the artwork itself.

From a science and technology perspective, we are examining what Callon and Law (1982) would call the enrolment phase (see also Callon 1986) where the actors are attempting to define their role as well as those of technology. In this study, the aim is to examine the dialogical

relationship between artists and ICT. Much of ANT's conceptualisation of power relations stem from Foucault's theories on the subject (Fox 2000). Although Silverstone dismisses ANT's use of the network metaphor in favour of a system (Silverstone 1994: 84-85, see also Couldry 2004), there is recognition of the importance of interdependent relations between actors and objects in the design and use of technologies. This suggests a Foucauldian model of power as relational (Foucault 1982, Bevir 1999) that is dynamically related to the mediation process. A return to the opposition between convention and mediation in the light of Foucault's conceptualisation of relational power suggests that the main point of contention between the two lies in the conceptualisation of agency. The difference lies in, on the one hand, Becker's emphasis on collective coordination of independent actors in the process of production and its inertia or transformation (innovation). On the other hand, Hennion employs dispositifs to analyse agency leading towards aesthetic experience (a kind of temporary surrender to the artwork). The former overlooks the functional aspects of conventions (other than its properties in minimising the cost of coordination) while the latter overlooks the meaning generated by the production and use of dispositifs over time. But once we compare Becker's 'system of convention' to Andre Berten's reading of Foucault's material and symbolic dispositifs (1999), instead of focussing only on Hennion's reading of the dispositif, we begin to see similarities. ANT's conceptualisation of foucauldian relational power can be understood in its development of work as a description of actor agency. Proponents of ANT methodologies are sceptical of macro-structures such as institutions (MacKenzie 1999). We could compare its understanding of work to improvisation in that it is the agent who is the one best suited to choose the necessary path (Latour and Strum 1999). ANT extends this agency to include technologies. Becker's description of inertia, as a hegemonic social and/or technological impediment to agency (Becker 1995), presents one solution towards avoiding the methodological extension of equating actors and technologies. The presence and complexity of technologies can impede action without action itself. Furthermore, it is arguable that inertia becomes relative when applied to convention. Conventions can be at once enabling and constraining, dynamic or inertial, depending on the power relations and interests of the agent when using them. This is another way of avoiding the metaphorical constraints of a structural 'script' as decried by Bourdieu (King 2004).

2.6.3 Remediation, tactical media and post-media

Two theoretical traditions that deal explicitly with artistic engagement with new media technologies are remediation and tactical media. In this section, I will address the reasons for not choosing these approaches as part of my conceptual framework. It will also address a third tradition, variably referred to as post-production or liquid art, which attempts to circumvent media in general.

Theorists such as Jay David Bolter and Richard Grusin as well as Lev Manovich have respectively developed theories on remediation (Bolter and Grusin 2000, Manovich 2001). This concept deals with the improvement on or refashioning of forms relating to older media by new media. Bolter and Grusin define remediation as a medium "which appropriates the techniques, forms, and social significance of other media and attempts to refashion them in the name of the real" (ibid: 65). Just as conventions/standards are mediated within the art world network, the artists in an art world network may develop conventions that are understood as examples of remediation. Many of the artists in the case study presented in the following chapters have previously practiced other, somewhat more established, art forms such as video-art or digital music composition. These previous practices may influence the stylistic choices concerning expression. But the concept of remediation does not provide sufficient conceptual tools needed to examine the construction of the artist as a social actor in relation to these forms and their supporting art world networks. Bolter and Grusin's definition places (re)mediation in opposition to/as a substitution for "the real" which arguably leads to a media-centric understanding of work with these media, leaving little room for other, non-media related, aspects of work. Although Bolter and Grusin recognise the importance of social relationships in the (re)mediation of reality, their emphasis on the interplay between transparency and immediacy of various media leave these very same relationships underdeveloped. For example, they identify a tension between popular culture and high art over what constitutes legitimate art using new media:

"The web sites that characterize themselves as art are often in a popular vein or are simply sites for graphic design. By calling themselves "art" and their creators "artists", these sites are asserting that their styles are legitimate. They are doing what remediators always do: borrowing names and forms from earlier media while claiming to be as good as or better than the media from which they are borrowing." (Bolter & Grusin 2000: 142)

But when comes the time to address the power relations that enable some individuals to distinguish which kind of remediation is or is not legitimate, the authors can only concede that "such a struggle" will determine "who should have the right to do this work of remediation" (Ibid: 143). Taken to an extreme, one could argue that such a laissez-faire attitude towards the social dynamics that enable or constrain actors is the result of a model which gives too much importance to media as the defining aspect of an artist's work. Although remediation is partly addressed in chapters 4 and in chapter 7, it is because of this overemphasis that remediation is an insufficiently robust concept for this study.

Other theorists have addressed how artists and other individuals can engage with new media with greater emphasis on the power relations that enable and constrain work. The media art-

ist's role has recently been portrayed by some theorists in a way that I would argue is consistent with the maverickness discourse presented above: one in which the artist's engagement is "tactical" and against the mainstream of new media social worlds' interests (Manovich 2001, Galloway 2004, see also online research documents Garcia & Lovink 1997). The concept of "tactics" as developed by de Certeau (1984) has been employed by new media art theorists to suggest an empowered 'user' who engages with ICTs as a structured space. Manovich employs an example to demonstrate the concept of a dialogical relationship of tactics and strategies whereby an artist generates strategies to produce an online space which is then 'tactically' navigated by online users. The model can be extended to imply that artists are themselves tactically engaged with the online strategies of software and hardware designers.

Galloway (2004) and Garcia and Lovink[13] apply a prescriptive model of tactical media to consumer electronics that provide access to the Internet. Such a model is expected to enable users to contest the hegemonic power of government and corporations. By using these technologies in unconventional ways, these authors argue that artists or any other users are able to criticize the establishment. In this model, there is the 'us' of the general public – including artists – who are users of ICTs and an unseen 'them' who produce, maintain and attempt to structure online spaces. The distinction between users of different kinds depends upon the kinds of tactics that they use to engage with ICTs. Tactical media provides a useful critique of established art worlds as the only means of producing culture. However, it could be argued that it extends the project of the 20th century Avant-garde movements such as Dadaism towards a fusion of art world activity and everyday praxis (Bürger 1992) into the realm of new media. Because of this reasoning, the model does not clearly define how artist-users are able to do anything other than to contest traditional power structures, leaving them to perpetually react to established technological and social conventions. Tactical media arguably ignores existing art world discourses in order to focus only on new media. In this sense, tactical media is a model for a kind of implicit perpetual 'maverickness' of the artist, or any other role in relation to new media.

In yet other academic and aesthetic circles, theorists such as Nicolas Bourriaud and Zigmunt Bauman have put forward concepts, relational aesthetics and post-production (Bourriaud 2002 a, 2002 b) and liquid arts (Bauman 2007) respectively. These aesthetic concepts, what I would refer to as post-medium art, arguably lead to a kind of anti-art in which the artist's role as producer is minimised in order to grant more importance to the situated flow of information and technology that bring meaning to the work. In these approaches, it seems possible for the artist to 'mix and match' conventions because they are dissembedded from the struc-

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[13] See Online research documents: Garcia and Lovink (1997).

tures that surround the work and the artist. The aesthetic choice lies in the choice of objects and practices used to join the disparate objects of consumption at the artist's disposal. Based on the framework set out above, I would argue that such approaches prescribe the artist's role as a user of conventions. Just as Crane and Becker understood mavericks as innovators in art worlds because of their ability to contest and introduce new conventions within the art world, these networked aesthetics generate an art world convention out of the novel fitting together of seemingly disparate conventions. But it remains unclear whether this is in fact the way artists understand and apply their role. Some would also critique such aesthetic theories for once again missing the importance of social power relations (Bishop 2004) that support and constrain such flows. Specifically as it applies to this study, relational aesthetics and liquid arts suggest that "anything" can become a convention; that it is up to the artist to decide how objects or information become artworks. Much of the critique is not whether the post-production, post-medium artist is or is not a legitimate producer, but to what extent are the relations between subjects and objects in these theories critically engaged in by the artist.

This section has developed how remediation, tactical media and post-media propose models for understanding how artists work with new media. However, as I have argued here, all three place an aspect of artistic work at its centre – in the case of the first media, in the case of the second, maverickness, in the case of the third, the artist – that are overly restrictive for explaining how artists design and use ICTs for the production of artworks.

2.7 Conclusion

Returning to the challenge of locating culture within this research's theoretical framework, the term itself becomes a metaphorical extension of a process in which the individuals play only one part among many. The conceptual framework presented in section 2.5 balances, I suggest, the interplay between the rules brought to bear on, as well as the 'autonomous existence' of, the tools of cultural production and the artist's agency. In this chapter, section 2.2 presented the production of culture perspective as a conceptual framework to examine the artist as a socially constructed role that enables the production, reproduction and contention of conventions related to the work of producing artworks. Section 2.3 and 2.4 weave together production of culture concepts developed in section 2.2 with theories of mediation. The combination of insights from both sets of theories generates a conceptualisation of the technological and organisational network in order to build a model for understanding the mediation of ICTs for an art world network.

Chapter 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In the previous chapter I developed a conceptual framework in order to address how actors within social worlds engage with ICTs in order to produce cultural artefacts. The first, production of culture tradition, starts from the vantage point of the producer of cultural artefacts in order to examine how social and technological transformations enable and constrain this activity. The other builds on mediation theory and the tradition of the social construction of technology to focus on the dynamic process of mediation between designers and consumer/users, organisations, discursive spaces and ICTs. The framework points to two sets of meaningful roles for artists working with ICTs for the production of artworks in an art world network: 1) the role of the artist as a designer and 2) the role of the artist as a user. A principal methodological challenge for this study is to identify and critically analyse power relations among actors and their technologies. A number of relationships between units of analysis – actors, technologies and organisations – relating to the artist's work have been identified as discussed in chapter 2:

- the artist – an art world actor who produces artworks within an art world through conventions, who is able to articulate maverickness as a source of art world power, and who engages in the work of mediating with ICTs as well as classifying standards as conventions.

- the ICT – a digital network that enables and constrains the multidirectional and continuous flow of interactive information processing based on variably transparent classification/standards circulating within discursive spaces and across social worlds.

- the art world network - an organisational art world structure for the production, dissemination and use/consumption of artworks for artists based on the (re)production of maverickness.

Three forms of work were identified within these relationships: articulation, mediation and classification. The dialogical relationships between these three units of analysis listed above are understood in this study as not only leading to the production of cultural objects but also

the meaningful articulation of ICTs in order to produce artworks. The research design and methodology is intended to provide a basis for answering the following research questions (see chapter 2):

How do artists design and use digital information and communication networks for the production of artworks?

I) Do artists articulate a conduct of maverickness in relation to networked ICTs? If so, how is it articulated and what are the resulting power dynamics for the production of artworks?

II) How do artists engage with the mediation of digital information and communication networks? Specifically, how do new media standards become meaningful conventions for artists and their art world networks?

III) Does the mediation of networked ICTs by artists in some way enable or constrain the (re)production of maverickness in an art world network? Specifically, are artists able to conduct maverickness in order to contest network standards?

A single case study has been devised and implemented in this research. The principle challenge in designing a case study for an art world network was to define its boundaries. Section 3.2 addresses this boundary issue by explaining the operationalisation of the term 'network' and section 3.3 proposes a solution to this challenge in the form of career threads. Section 3.4 provides an outline of the case study which is the focus of this study and highlights its specificities and their implications for the subsequent analysis of the data.. The methods used to collect and analyse the data collected are presented and developed in sections 3.5 and 3.6.

3.2 Operationalising the network

When analysing networks, it is difficult to define a network's boundaries without defining the object of research itself (Strathern 1996). Conversely, practices and values embedded within such networks are not necessarily bounded within an organisation (Howard 2002). The solution, in part, lies within the methodological approach of allowing subjects to define the boundaries of the network. In this study, the aim is to examine possible patterns in the case study that relate to specific work practices (Foreman 1948). Since the study traces aspects of meaning in these work practices, methodological tools inspired by anthropology and social ethnography seemed to suit it best. Nevertheless, sociology and anthropology's placement of cultural production within its own theoretical context makes it difficult to situate it in relation to outside influences (Mahon 1990). Some researchers recognise that ethnographic research on production must therefore be put into the context of the larger world of production (Ibid). Not only must the researcher understand the complex process of interpretation on the part of

producers and audiences but it is also necessary to keep track of the overarching trajectories of political, social and economic flows that influence the work observed. The first challenge is therefore to ensure that the network examined is not solely understood as being located within a closed social world.

A second challenge is the feasibility of covering all aspects of the art world network or the digital information and communication networks. Neither is defined by boundary characteristics such as geographical borders or specific time frames. Both have an international scope. Hine (2000) argues that ethnographic research involving the use of digital information networks such as the Internet must look to flows rather than geographic location as the limits of the field of research. Adapted to this study, her argument suggests the need to examine the transforming and transformational trajectories of conventions and standards rather than isolating them to a specific time and space. How is this possible when one is observing the very transformation of such a digital information network by multiple heterogeneous actors from different social worlds? In a similar quandary, Strathern (2004) describes the challenge in studying non-bounded, multidisciplinary research organisations. In such cases, she argues, it is necessary to question the conceptualising and operationalising of the network. The conceptualisation aspect having been addressed in chapter 2, with respect to operationalisation, Knox et al. (2006) show how networks are a way of 'breaking up' structures and systems in order to study relations, particularly between individual agents. There are problems with this approach as encountered by Riles (2000) in her research:

"For Riles the problem emerges ethnographically out of spending time with people who are living these networked social movement formations: different meanings and manifestations of something called a 'network' emerge in the course of an ethnography whose realization and identification challenge the very basis of using 'network' as an explanatory, descriptive, or analytical tool at all." (Knox et al. 2006:131)

The artist's application of the network as a technical and/or organisational convention in art world networks is potentially problematic for the conceptual framework in this study as it is already employed as a means of 'bringing together' rather than 'breaking up' (see section 2.4). The network is not a metastructure applied to the research subject but a structure emerging from the field. Although 'network' may function as a common organisational or technological boundary for the actors, it does not necessarily provide clear methodological markers in space or time. The 'production of culture' tradition looks to arts organisation as a research boundary and the individual producer or consumer of cultural products as the actors within that boundary in a similar way as media and consumption theorists who look to, for example, the family as an organisational boundary. Physical sites such as the household or the

building which houses the arts organisation can become fixed topographical arrangements that bound the organisation. In the case of an art world network, the site and the location of actors is not necessarily stable. The second challenge is that, even though one might try to isolate the network to one social world, the very boundaries of this network may not be available.

Part of the solution to these two challenges lies in looking to the movements of actors and objects to generate an imprecise, but thorough, observation of a case study of such a network. For this purpose, the model of multi-sited (Marcus 1998) network seems most appropriate. The objective is not limited to the analysis of the communication of content or the creation and maintenance of social ties (Wilson and Peterson 2002, Wellman et al. 1999) but extends to work with specific conventions/standards in this study. Constructing the boundaries of the network in the present case is dependent on the subjects/objects of study: the artists, the ICTs, and the work conducted within the art world network. Rather than predetermining the boundaries, the best course of action is to follow the trajectories of actors and technologies over time and space to see whether and in what way they generate these boundaries. Bowker and Star (2000) come to a similar conclusion in their model for analysing standards called 'filiation' which is described as the ties between individuals and standards or classifications. This is the methodological strategy adopted in this study. The next section develops one of Marcus's (1995) ideas for the study of multi-sited networks, that is, following the life/biography.

3.3 Career threads as signifiers of roles

The production of culture tradition analyses the artist's role within art worlds by studying the artistic careers of individual actors where research is focused on the actor's daily work (see White and White 1965, Bourdieu 1993: 176-191, Peterson and Anand 2004, see McRobbie (2002, 2004) and Taylor and Littleton (2008) for recent research on creative careers in the United Kingdom, see also Negus' (1997) critique of Peterson's approach, and Menger (1999) for a more sociology of organisations approach). Peterson's (1989) approach to the study of how session musicians performed their roles as artists involved following a number of individual careers of actors within what he termed a simplex (similar to an art world network but focussed on different forms of technical expertise rather than maverickness). Locating the artist role within everyday practice of cultural production allows the researcher to look past the artist's desired representation and attempts at differentiation in order to analyse the ongoing performance of the role over time and space. By following their careers, the researcher also encounters other actors who contribute to art world work who may not otherwise be recognised. The artist role as a producer of cultural artefacts is not isolated but rather supported

and partly defined by individuals and organisations[14] which Becker classifies as support personnel (1982: 77-92): those who make it possible for artists to perform their role but are not considered artists themselves within the art world.

Anthropologists and media theorists are able to study the careers of technologies (Kopytoff 1986, Silverstone et al. 1991, Gosden & Marshall 1999, Haddon 2004) in a similar way to artists' career trajectories in that both kinds of trajectories function as a way of analysing wider power relations within a social organisation. In the case of technologies, one would follow a particular object in time and space in order to examine its mediation by a group of individuals (see section 2.3.5). Tracing careers enables a researcher to construct a description of their activities within a social world. In most cases, this is accomplished through participant observation, interviews, document analysis, or a combination of these methods. In this study a combination of these techniques is used to construct biographies of careers within an art world network. The analysis of these careers provides a basis for examining the artist's work in the light of the research questions.

Participant observation allows the researcher to examine the power dynamics involved in the work of being an artist. As time progresses, the researcher observes how artists conduct aspects of their work and how this conduct is related to their status within the art world network and wider social worlds. As developed in chapter 2, work is understood as the situated and discursively mediated practices of actors. The observations are not limited to meanings but to the description of situated actions (Silverman 1998). In the case of technologies, this allows the researcher to examine the negotiation process that surrounds its mediation within the discursive spaces and the organisational patterns of work activity. (See section 3.5 for a detailed account of how participant observation was employed as part of the ethnography)

It has been argued that studies at the micro-level of actors have great difficulty taking into consideration the structuring influence of history (Barry & Slater 2005: 14). For this study to understand the artist, it was necessary to examine the artist as a socially and culturally constructed role over time that was embedded within social worlds and enabled/constrained by maverickness. To understand the social construction of the artist as producer, we need to observe the role's continuing reproduction over time by individuals through their actions, discourses and technologies. Practically, participant observation in this study did not allow the researcher to follow the selected careers over a sufficiently long period of time. It was therefore necessary to employ other means of collecting information.

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[14] See Singerman (1999) for the social construction of the academic American fine artist in the 20th Century.

Document analysis was employed to construct an historical account that extended beyond the period covered by participant observation. In the case of the artist, this method provided the material to construct an outline of the academic background, past works produced, and other information crucial to a contextualised understanding of the artist's work and, specifically, the conduct of maverickness as it pertained to the design and use of ICTs. In the case of the ICT selected, it provided a picture of its intended design and use prior to its appropriation by the members of the art world network. Document analysis provided a basis for a wider understanding of the ICT mediation in new media social worlds and art worlds – a kind of meso-level temporal scale for analysis. In the case of the art world network, document analysis enabled the construction of an historical account of past projects and some of the overarching themes emerging from this work. Documents were analysed for discourses and practices related to the classification of ICT standards and new media work in terms of art world conventions using thematic analysis (see section 3.6 below). Documents were also employed, in combination with the other methods, to map the recurring spaces and times of the art world network's activities. The collection of documents was problematic since an art world network does not necessarily keep organised archives (see Crane 1987:145-148). However, protocols for the selection of documents used included an indication of the time that it was produced and its author (individual or organisational) based on Altheide's (2000) recommendations. Online documents included websites and digitally formatted disks such as DVDs while offline documents included individuals' archived transcripts of meetings, reports, and promotional material for events. For lists of specific documentation sources and how they are analysed, see annexes 3 to 5 and section 3.6, respectively.

Interviews provided a key support for the construction of career threads of the artist and the ICT by allowing the actors to build an autobiographical account of events, practices and discourses (Fischer-Rosenthal 2000, MacLure 1993). They offered the actors the chance to build their own version of the careers observed and, therefore, provided the researcher with a deeper understanding of how art world network was constructed. MacLure (1993) suggests that autobiographical interviews are in effect employed for the practical purpose of constructing ones role and those of others within a social organisation. Auto-biographies are used by respondents to:

> *"[...] make sense of their conduct, to establish allegiances, to justify moral positions and defend [...] ideals." (Ibid: 373)*

In this study, 34 individuals were interviewed of which 20 were autobiographical accounts by actors (not including three separate interviews with Don Foresta (see below), for the most part artists, although this classification was problematic – see chapters 5 and 6) who had

worked or were currently working with the network, six were contextual interviews with individuals familiar with the network, eight were interviews with engineers or technical support personnel familiar with the relevant technology (Access Grid).

These methods provided a basis for building multiple career threads through participant observation, document analysis and interviews. All three modes of data collection were used to construct the career threads. The combination of observation of activities, document analysis and autobiographical interviews provided a description of how actors worked within the network. The study examined the trajectories of careers to see whether and in what way actors and technologies tried to establish or break free of conventions while enculturating ICTs as tools for artistic activity. In terms of research design, the study maps three trajectories: 1) the career of an individual who is conducting an artist's role, 2) the career of a specific ICT which may or may not be successfully mediated to produce art works, and 3) the work involved in selected art world network projects. The data collected by the three methods described above were historically and thematically analysed (see section 3.6) in order to construct the three career trajectories. As the field work progressed, each trajectory was coupled to a particular kind of work: mediation with the ICT, articulation with the artist, classification with the art world network projects. The construction was developed in several ways: interview accounts and documents were used to extract key historical information (comparing multiple interview accounts of the same events as well as with documents) which was used to generate a historical narrative. Following a thematic analysis, these same accounts were used to identify meaningful work which led to the reproduction of discourses and the mediation of social standards and conventions.

3.4 Selecting the case study

Now that the challenges of operationalising the network and the overall methods used to conduct the research have been laid out, the following section addresses the specific case study in more detail including the challenges posed by the specificities of the case.

3.4.1 The MARCEL Network

The research design makes use of a single case study and it was therefore not feasible to provide a representative data set (Hakim 2000:59-72). However, the objective here was not to provide statistically reproducible information concerning art world networks. The priority instead was to develop deep, grounded observations that yielded insight into the complex dialogical relationships between artists, technologies, and the social organisations that enabled their collective work. Much like Silverstone's (1985) production case study of scientific documentary film making, an in-depth approach generated a richness of description as well as generalised knowledge. The case study selected was the MARCEL Network (MARCEL), an

acronym for 'Multimedia Art Research Centres and Electronic Laboratories'[15]. It is described as follows on its website:

"MARCEL is a permanent broadband interactive network and web site dedicated to artistic, educational and cultural experimentation, exchange between art and science and collaboration between art and industry."[16]

The same website summarised the network's goals as:

• *"to promote artistic experimentation and collaboration in all forms of interactive art*

• *to promote philosophical exchange between art and science*

• *to develop the potential of the network as an educational tool*

• *to study the network as a pedagogical subject*

• *to develop co-operation between art and industry*

• *to participate in the development of cultural expression on the network"*[17]

MARCEL stressed 'experimentation' and 'collaboration' with academic, scientific, and commercial partners as an approach to making art with new media. This ambitious set of goals suggested a strong emphasis on the development of an empowered artist role in designing and using ICTs to produce artworks. The list of international partners involved over its four years of existence (from the beginning of the fieldwork to its date of inception – 2001) suggested that it was a well-established network working with ICTs for artistic purposes. At first sight, MARCEL was eligible for the first and/or the third class in Crane's art world network classifications (section 2.2.5). It was attempting to produce innovation through its 'approach to the aesthetic content of its artwork' (Crane 1987: 14) by appropriating standards of experimental high bandwidth digital ICT networks and/or through its 'approach to the production and distribution of art' (Ibid: 14) through its attempts to develop alternative means of coordinating art world activity. Nevertheless, one cannot altogether rule out the second classification related to content.

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[15] See Online research documents: MARCEL Network (2006)

[16] See Online research documents: MARCEL Network (2004a)

[17] See Online research documents: MARCEL Network (2004b)

3.4.2 A reflexive account of the case selection

In order to further develop the methodology for this study, it is necessary at this point to take a more reflexive approach which is consistent with the research methodology itself. This is intended to provide some insight into my own situated role within the research context.

I first learned of the MARCEL Network when a former teacher at King's College London encouraged me to apply for the EDS MARCEL Studentship offered by the Department of Media and Communications at the London School of Economics and Political Science (LSE). After what seemed to me to be a long and nerve-wracking application process, involving the submission of a personal statement that outlined my research proposal, I was invited to accept the studentship. I was later informed that my selection by the committee was based on my interest in the project. It is however instructive to reread the proposal to gain a retrospective view of my own understanding of the research. The description of the studentship posted by the department[18] clearly outlined a case study of the MARCEL Network and the task of maintaining the network's Arts and Industry node. This gave me access to the network as an active participant for a period of more than two-and-a-half years (31 months) from September 2005.

From the start, my interest was in the production of an ethnographic case study of new media artists' use of ICTs. First contact was established with Don Foresta, one of the Network's founders and its active coordinator, in April 2005. These first contacts strengthened my resolve to choose ethnography as a methodological foundation for the case study. As with most ethnographic analysis, some methodological choices had to be made while in the field (Silverstone et al. 1991). Over the course of the preliminary field observations, three initial methodological challenges came to the fore.

1) When field work began, MARCEL did not have any fixed geographical location nor did it have a head office. According to the list of members indicated on its website[19], MARCEL extended across Europe (54 members) and North America (39 members) with additional members across the world (two members in Australia and one in Taiwan). Don Foresta acted as my gatekeeper (Deacon et al. 2007: 268) for access to MARCEL's activities. Even though he would repeatedly explain that he had "stopped being an artist" in order to help organise MARCEL, I quickly chose him as the individual whose career should be charted (see chapter 5). The best way to describe this process of selection would be to invert the previous sentence in order to state that Don Foresta selected me to chart his trajectory. It is

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[18] See Online research documents: Media@LSE (2005)

[19] See Online research documents: MARCEL Network (2006)

not that he actually consciously did so. Even if he had, it would have been of little consequence. Rather, by collaborating with the LSE in initiating the research project and by acting as my gatekeeper to MARCEL, a power relation evolved between him and me which should not be overlooked in this research. This interdependency - where I would count on him for access to the art world network while he was subject to my grounded interpretation of the art world network - meant that his trajectory would necessarily play an integral part in my understanding of MARCEL and its activities. Deacon et al. (2007: 268) argue against a close relationship with gatekeepers or sponsors, stating that the researcher's affiliation to the gatekeeper may generate problematic relationships with other members through over-association with the gatekeeper while possibly also generating an enhanced status for the latter through association with a research project. This last point was made all the more pertinent as the selected case study was closely tied to academia. Arguably, it was through the use of multiple career threads as well as multiple methods including document analysis that extended beyond the limited scope of participant observation, that the research could address these challenges. By charting Don's career leading into and from within the art world network, I was able to gain first hand observations of his work with ICTs and his views of MARCEL. I encountered many other artists and individuals during the course of the field work who informed the empirical research, but his career was closely affiliated to MARCEL (for reasons that will be made clear in chapters 5 and 6). By selecting him, the objective was not to generate observations of weak or strong ties in a kind of ego-centred social network of relations (Wellman et al. 1999) or the study of online communities (Wilson and Peterson 2002). Instead, the objective was to acknowledge that the sampling of actors was necessarily influenced because it was subject to power relations which were part of the network's dynamics. 'Gatekeeping', in this sense, was inverted as the research interest lay in discovering the characteristics of the gate as much as what was contained within its walls.

2) Most of the artists encountered over the course of the field work produced what are known as telematic artworks. Telematic artworks – using digital telecommunications technologies in order to produce of synchronous online events (this will be further described in section 4.3.1) – constituted a set of conventional practices (see section 2.2.1 and 2.2.2), for the production of artworks. Such practices seemingly placed the artists in a disadvantaged position relative to mainstream artistic practices because of their emphasis on real-time, or synchronous communication (Manovich 2001: 162). Despite such a clearly defined genre, the technologies enabling these activities encountered over the course of the research were not as clearly defined as initially anticipated. Early on, due to my limited technical knowledge of ICTs, I worked on the assumption that the MARCEL Network's 'permanent broadband

interactive network'[20] was a clear enough technological artefact to take as starting point for the research. But the term itself soon became a fuzzy collection of applications and hardware that was not understood or applied consistently among the various actors. Although these initial observations provided early clues as to ICTs' status as art world conventions, the selected ICT's career trajectory had to be more clearly defined in order to follow its mediation in time and space. This was accomplished, in part, by stratifying the networked ICTs encountered using December's (1996) model. Jonathan Grudin (1990) productively uses a similar type of stratification technique to examine the historical development of user interfaces with computers. A description of each layer is listed below. Stratifying the infrastructure of the ICT into media form (a collection of media objects), media objects (online or offline iterations of ICTs), media instances (time relating to user engagement with media objects), and media experiences (subjective user engagement as part of media instances), made it possible to chart the different points of technological emphasis as well as the uneven application of transparency onto the ICT infrastructure.

Media Form

- December defines two separate media strata that, for the purposes of this research, are combined into media form. Media Space constitutes the entirety of a specific collection of software and hardware enabling users to circulate a specific kind of content over a network. (Ibid: 26-27) Many media spaces can co-exist on a particular network including HTTP, Java, etc. An example in this study would be videoconferencing using the Video Conferencing Tool over the M-bone network. Media Class is defined as a collection of hardware and software that share a number of characteristics which can include a number of media spaces. An example would be accessing academic high bandwidth research networks such as JANET using the Access Grid Toolkit. Arguably because December's model was developed in the mid-1990s when Internet communication was still in its infancy, it was still relatively easy to make distinctions between media classes and media spaces. As will be shown in Chapter 4, sections 4.2 and 4.3, such distinctions became far more difficult to make. Most of the actors encountered over the course of the field work made little to no distinction between the two. For the purposes of this research, and to minimise the level of technical specificity involved in describing the ICT, media form will be used to refer to media class and media space unless otherwise specified. It should also be noted that December's triadic model "server, client, content" of actors who move among these units is limited to the 'online' until the level of media experience (see below). This is a significant limitation that is overcome in this study by extending the media form to include peripheral hardware that enables user interaction with the digital network. This includes video and audio capture and broadcast such as digital

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[20] See Online research documents: MARCEL Network (2004a)

video cameras, digital video projectors, digital conference microphones, speakers, and even conference chairs, tables, desks, etc.

Media Object

- A media object is defined as the specific product of a media form. December employs the following example to describe the media object: "The World Wide Web (WWW) Frequently Asked Questions (FAQ) List on the SunSite Web server sunsite.unc.edu, accessed through the Netscape Navigator client for X, version 1.1" (Ibid: 28). Extending the modifications brought to the definition of the media form above, media objects in this study also include specific offline digital arrangements of hardware. An example of a set of media objects would therefore be: the USB digital Webcam, headphones and desktop microphone connected to my office desktop computer (what is called a Personal Interface to the Grid or PIG) providing video and audio outputs to the MARCEL Access grid Virtual Venue.

Media Instance

- The unit called media instance introduces the temporal dimension to the analysis. An example of this unit could be a one-hour videoconferencing session between an Access Grid Node in London and an Access Grid node in Toronto using the MARCEL Access Grid virtual venue at 10:00 GMT.

Media Experience

- December defines media experience as a 'particular user's perception of a set of media instances' (Ibid: 29). As alluded to in the media space section, media experience is complicated in this model by December's omission of the offline aspects of performing tasks with a digital information and communication network. Perception of the media instance can therefore not be limited to content displayed on the screen. Examples of types of media experiences that will be dealt with in this study include telepresence and semi-immersive collaboration of users during MARCEL events and other artistic events using Access Grid within a videoconferencing room.

In effect this stratification of the ICT is similar to the Russian doll analogy employed by Latour (1996: 215-217) when describing the many technical aspects of an ultrasound sensor. The objective of this stratification was not to describe socio-technical complexity (Latour and Strum 1999) but to develop analytical tools that would allow me to observe the multiple and potentially overlapping transparencies relating to the design and use/consumption of the ICT. By conceptualising the ICT as not only an object but as an artefact with multiple interdependent layers of technologies with varying degrees of transparency, it has been possible to understand the ICT as having a complex set of interrelated meanings and functions that are not necessarily fixed. It is a way to avoid "black boxing" (Star et al. 2003) the ICT, in its func-

tion and its meaning which, in turn, allowed me to compare the ICT's career thread to other technologies encountered.

The meaningful articulation of the ICT as media form was, in effect, a kind of double inversion of the approach taken by Silverstone and Haddon (1994): rather than only tracing the career of an artefact and its content through time within a mediated and mediating discursive social space, I also followed the artefact's appropriation by an art world network as a set of overlapping mediated/mediating standards. The technology's career trajectory is not only examined in relation to a relatively fixed physical space, but as a fluctuating interrelation of new media standards, discursive spaces and art world conventions.

Using these units, one media form was isolated – Access Grid. Don and other members of MARCEL promoted Access Grid extensively as a significant application for the network's activities and as a means of 'squatting' the academic high bandwidth network (see chapters 4 through 6). Selecting Access Grid allowed me to focus observations on specific instances of work surrounding the design and use of high bandwidth academic networks. The career path selected for the research was that of the media form and was manifested in media objects such as the MARCEL Virtual Venue and certain Access Grid nodes (see chapter 4). Although this selection could be at times frustratingly narrow in scope, it provided a unit of analysis that allowed me to better understand the interdependence of these online applications and the contradictory discourses and practices that surrounded them. The selection also enabled comparisons across similar layers, such as two media instances, while acknowledging that other layers, such as aspects the of the media form or object, were different.

Access Grid over the high bandwidth academic network constituted a digital network that enabled and constrained the multidirectional and continuous flow of interactive information processing. It was understood as being composed of variably transparent standards with respect to all of the four units above circulating within discursive spaces and wider social worlds. If it was designed and/or used within an art world network, it was understood as mediated, articulated and classified both as a standards (or set of standards) as well as potentially mediating other related standards for the production of artworks.

 There is the danger of extending the technological aspects in one of two overly-deterministic ways as addressed earlier in the section 2.2.6 on the production of culture: firstly, defining technological change within the art world networks as a one-way process of integration and transformation. Secondly, to limit the boundaries of the art world network based on technological factors. Inversely, the study might become too diffuse and be unable to trace the ICT's career if it was unable to identify and name the technology under observation. Invoking December's model (1996) for the stratification of ICTs to build on his nomenclature for units of

analysis for internet communication made it possible to stratify the ICT. This, in turn, enabled the generation of a well-defined career trajectory in which the shape of the ICT was not predetermined or unchallenged.

3.4.3 Selecting a sampling frame for the art world network

The foregoing develops how the methodology for this study allowed an actor's and a technology's trajectories to define the boundaries of the network. But this did not eliminate the need to seek a deeper understanding of the art world network in which the actor and ICT trajectories were mapped. Leaving the two in a vacuum would not provide an adequate picture of the mediation process. Along similar lines, Georgina Born (2009) argues that a layered understanding of the context in which an artist or artwork exists is necessary. It was therefore necessary to construct an historical account of the activities leading to the network's creation as well as an account of the daily work practices within the art world network. The principle challenge in this respect was sampling – assembling like with like in order to compare them rather than examining dissimilar subjects/objects without pre-classifying the subjects/objects.

I had initially assumed that it would be possible to determine membership by consulting the list posted on the MARCEL Website. But membership in the MARCEL Network was not so easy to determine (see chapter 6). Not only were the physical spaces where the art world network congregated relatively inconsistent (see chapter 4 as well as chapter 6), but the organisational and individual engagements were unclear and contingent (see chapter 6). The art world network as a 'production of culture' model is associated with artistic innovation and transformation of conventions analogous to art history's descriptions of artists' circles or movements (Crane 1989, Peterson & White 1989). Just as Diana Crane (1987) divided her research into three such movements in the 20th century New York art world of painting (abstract expressionism, figurative art and photo realism) the boundaries of such networks are imprecise (see section 2.2.5). However, because her research took place 45 years after the inception of these relatively successful and geographically static networks, it was possible to consult an extensive number of publications and archives documenting their progress (Crane 1987: 145-148). The focus of the current research was not confined to an explicit geographical location such as New York even though part of the funnelling process (Silverman 2006: 93-94) led to a progressive focus on activities in the United Kingdom. This funnelling, however, was informed by the paths traced by the career trajectories over the course of the research.

Nor could this research benefit from a wide historical perspective like the one afforded to Crane in her research. It was, however, important to ensure that the definition of the art world network put forward was informed by the fieldwork. The boundaries of the art world network observed in the case study might not necessarily have been those of the MARCEL Network

and vice versa. An overly bounded definition of MARCEL would pre-figure the answers to the research question. For example, if the definition was limited to a "Charity based in the UK"[21], as was stated on their website, the links and nodes would have been confined to the relationships involved in the legal framework between registered individuals of the organization. The art world network would have been relegated to a simple non-profit organizational nomenclature such as that used by any other non-government organisation. In such a case, instead of an object of research, the network would be bounded by the researcher rather than by the actors and measured in the light of a constraining definition bringing about two difficulties: firstly, the boundaries of the network set by this definition would constrain the field of observation to methods such as document analysis of end of year reports and participant observation of meetings of the board of directors. This would not provide the material needed to answer the research questions. Secondly, constraints imposed by the researcher would distort the importance of the definition itself: that the network is a non-profit registered UK charity could be of little or no importance to the network's activities. The network had to be 'cut' (Strathern 1996) by the actors themselves in order to ensure that I did not pre-determine the dynamics of the network.

In the case of MARCEL, it became clear that its membership was more contingent than what I had first gleaned from its website and participation could be better described as single or recurring engagements over varying periods of time. Conversely, the art world network under examination was far more diffuse and broad than initially expected. Artists using ICTs to collaborate and experiment online with academic, scientific and commercial partners were far more common than originally anticipated. Much like Crane's movements, artists and other actors did not limit themselves to a single set of art world conventions like telematics. The resulting broad scope would have made the research next to impossible. Because of this, it became essential to find a way to isolate and triangulate the career threads; to look for the filiations (Bowker and Star 2000) that linked them to the same conventions. This meant examining the work of classifying the network itself: looking for how this work established network boundaries.

The sampling frame was developed in order to be representative while remaining practical. Employing the artist career and the technology career as a basis for snowball sampling (Lea et al. 1995: 467), seemed to be the most realistic approach. There was the danger of research bias (Howard 2002) but the primary research objective was to examine a theoretical model of mediated conventions in the light of field experiences and observations. As Burawoy argues (1998), as long as it was recognised on the part of the researcher and explicitly expressed

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21 See Online research documents: MARCEL Network (2004a)

within the research, it was unlikely that sampling would influence whether the theoretical model held under the weight of the evidence.

The empirical study was centred on three trajectories: Access Grid, Don Foresta and my work as a MARCEL supporting member and coordinator for one of its website's nodes and participant in some of its working groups. This last thread particularly focused on two projects. As will be further elaborated in chapter 6, the MARCEL website was one of the earliest media objects created by the MARCEL Network. It was an ongoing project that involved many MARCEL members and was identified by Don Foresta as a key component in enabling the coordination of its activities, particularly in relation to the use and design of Access Grid for artistic activity. By participating in this work over a period of 31 months (from September 2005), I was also a participant in the power relations circulating within it (Burawoy 1998). This engagement provided, when combined with a critical reflexive analysis, first hand observations of the network's activities. I now turn to a description of the ethnographic participant observation method as employed in this study.

3.5 Ethnographic research for art world networks

The principle strength of the ethnographic approach is that it offers the chance for grounded observations made possible by the researcher's extended, direct study of the three types of work in context. These types of observations are not necessarily possible through quantitative methods which rely on bracketing context to provide data (Burawoy 1998) such as the social network analysis of communications between members of an online community through counting of texts, email correspondences and other online artefacts. Although approaches such as social network analysis (Wellman 2001, Wellman et al. 1996, Wellman, Garton and Haythornthwaite 1999) have developed convincing methods for analysing the number of links between nodes in a social network, the objective of the research was not to exhaustively trace the network of social relationships within the art world network but to examine its circulation among a disparate group of actors in context. The degree of complexity and contingency of the art world network rendered mapping specific social ties unproductive. Readings such as content or network analysis would have missed social cues and values that were generated and maintained in the offline environment or through external online interactions which in turn would have resulted in organizational or technological determinism (Howard 2002). In the specific instance of a production case study, direct observation and participation offered the possibility of detecting conventions of practice (Becker 1998) which were not otherwise identified through interviews or other types of qualitative research methods. Ethnography was particularly useful to describe the stakes of representation for marginal or oppressed groups and how such actors hold the power to shape identities and resist imposed depictions by dominant

cultural narratives (Mahon 2000). Applied to artists working in art world networks, these advantages become all the more practical in the examination of the articulation of maverickness conduct, the mediation process and the shifts between design and use when engaging ICT standards.

In the case of this research, I engaged in participant observation for the ethnography through the coordination of an online node for the MARCEL Network and assisting in a number of other MARCEL projects. Although the specific tasks outlined in the studentship application comprised only maintaining and occasionally posting content on the Arts and Industry section on the MARCEL Network's website (see chapter 6), the work I did over the course of the field work extended beyond those specific tasks. This was, in part, the result of my own initiative in order to come into contact with other members of the network. But it also reflected the type of freelance, 'flex-time', and volunteer work structure found in many arts organisations (McRobbie 2002, Neilson and Rossiter 2005, see also Menger 1999 for a general survey of artistic work and section 6.3.5 for details of my work). Included in these tasks were: contributing to the production and coordination of a MARCEL Network Managers' meeting in March of 2006, writing and submitting funding applications, testing and updating aspects of the new version of the MARCEL Website. Most of these activities were coordinated from the office provided to me by the Media and Communications Department at the LSE.

In many instances, my access to individuals and events was made possible by accompanying Don Foresta (see section 3.4.1 above) on his work while in the United Kingdom and in parts of North America. In other cases, I worked closely with other members of the network (see section chapter 6). In most circumstances, my role as a researcher was explained to other participants by either myself or Don. I would carry a field diary with me in which I transcribed interactions between individuals and noted observations on site. In situations where I was more involved in the work (for example, collaborating with others in the uploading of content onto the MARCEL website, see section 6.3). I also wrote observations after the fact. The complete field notes of the work for the MARCEL Network taken from September 2005 to 3 April 2008 (the official date of the launch of the third MARCEL website – see chapter 6) were collected in five field diaries (MARCEL Network Archives 00079 to 00083, see annex 1). Though most notes were taken by hand, in some cases audio or video recordings of meetings were also used (MARCEL Managers' Meeting recordings (MARCEL Network Archives 00084 to 00089, see annex 1)).

The objective of this participant observation was to carefully document the ways in which the artist's role was performed and mediated in relation to the design and use of ICTs and to collect documentation for historical construction and thematic analysis (see below). I also ob-

served the spaces and times in which this work took place. The 31 month period starting in September 2005 was not a consistent participation. It was punctuated by intermittent periods of inactivity (or rather, activity unrelated to the fieldwork, see section 6.3.5 and 6.4.2). The MARCEL events I participated in over this period included (see section annexes 3 to 5 for a more detailed list of moments):

- Two MARCEL meetings concerning the MARCEL website's management (one in London, United Kingdom, one in Montreal, Canada) (see chapter 5);

- Two MARCEL "Hi-bandwidth Art Research Network-UK" working group meetings (see chapter 4, 5);

- A series of meetings for developing funding application (see chapter 5);

- A series of working sessions designing and maintain the third version of MARCEL's website (see chapter 5).

Part of the participant observation comprised visiting Access Grid nodes that had been used for artistic purposes. In all, 10 Access Grid nodes were visited including four in the United Kingdom, four in the United States, as well as one in both Canada and The Netherlands.

The 31 months of participant observation led me to a few fundamental difficulties which affected both the theory and methodology for this study and therefore for the research design. The experiences accumulated over the course of the participant observation, including interactions with gatekeepers and peripheral contacts related to the field of enquiry as well as experimentation with relevant technologies inevitably shaped my views concerning the object of study and the theoretical framework for my research. The difficulties in participating in a MARCEL supported Access Grid artwork, for example, defined the kind of information I accessed for chapter 4. My own difficulty in communicating with members of MARCEL outside pre-arranged, formal, face-to-face meetings contributed to the methodological approach presented here. In meetings with people who had little or no direct contact with Don Foresta in order to discuss MARCEL's activities, individuals were often puzzled about the specific nature of the network and looked to me for information. In such situations, the roles were reversed. Rather than gathering information, I felt I was acting as a representative of the network. As one of its active participants, such a position was appropriate since it was consistent with the roles of other participants. It was important, however, for me to understand the consequences of such responsibilities. Instead of a form of power circulated through hierarchical delegation to control the networks representation, I was subjected to other less traditional or less explicit forms of power which needed to be understood.

Similarly, when approaching actors, I was a representative of both the LSE and of MARCEL itself. Some of its members assumed that I had more information about the network than they did (which in some cases was true). This framed how actors would answer my questions and how they would represent their work and their interests. There was a general perception among some members of the art world network that a student of the LSE embodied certain ideological biases. Artists who were generally suspicious of the field of economics could justifiably be expected to project these suspicions onto a student hailing from one of its most recognizable academic institutions.

Michael Burawoy defends the participant observation approach to research in the context of what he calls the extended case method. He believes this "reflexive science" (Burawoy 1998), subjected to power effects, is a necessary counterweight to survey research which is subject to context effects. Because I was embedded within the network to study its shape and its practices, I was subjected to its dynamics of power relations. This experience offered the opportunity for a better reflexive understanding of the network's power dynamics. In my case, this involved particular challenges. For example, since the boundaries of the network were not clearly demarcated or explicitly hierarchical, respecting certain elements of the organizational structure of the network was difficult. It involved finding my place in terms of "the pecking order" when working with other members, all the while respecting the responsibilities and values implicitly or explicitly set for an active member of the network. It was also complicated by the importance of self-initiative (see chapter 6). This balancing act was part of the collection of information that can only be attained through an ethnographic approach to the study.

Of the modes of corpus construction proposed by Marcus (1998: 89) follow the life/biography was chosen to steer the collection of field notes, including participant observation and autobiographical notes, as well as audio recordings of participant observation of the network's activities and document analysis. These selections should not, however, be entirely considered as separate from the conditions of the fieldwork. It is important to recognize that all of the modes of corpus construction were overlapping and interdependent. They, in turn, served as foundations for the following analytical tools.

3.6 Historical construction and thematic analysis

One of the challenges of the research was to construct a coherent narrative illustrating the artist's work of both designing and consuming/using ICTs. In most instances, production case studies informed by participant observation benefit from the linearity of a start-to-finish production process for cultural content (Silverstone 1985) or the repetitive genre patterns of production enacted by particular roles within a specific, well-defined art world (Peterson and

White 1989, Born 1995). The career strategy is a means of observing the changes over time in an actor's or a technology's social and symbolic status. The temporal framework for this case study was more difficult to identify. This was partly due to initial uncertainty pertaining to the nature of the work itself: observing the contingent mediation of an ICT, identifying the negotiations surrounding the conduct of an artist role in relation to an ICT's design and use, tracking the different patterns of art world network activity. Historical analysis enabled me to generate an understanding of the information collected and share it in a way that best reflected the field observations. In this study the aim was not to examine the intentionality of the actors, but the discourses and practices that enabled and constrained actors' work with ICTs in the art world network. The process of constructing a document relating and analysing these career threads would necessarily mediate the reader's interpretation of the study (Woolgar 1981). Without a single linear narrative or fixed location, how could one ensure that the information imparted by the research document was understood by the reader? A linear narrative through time and space could not provide an in-depth description of MARCEL due to the complex interweaving of multiple careers under observation. The analysis of mediation, articulation and classification needed to be communicated in a way that did not artificially create ties between events, individuals and their relationships if there were none to be found. The solution was to generate a series of analytical moments – both historically and thematically framed – to construct a coherent empirical analysis. The moments were then used to string together the three different methods – participant observation, autobiographical interviews, and document analysis – into discreet yet relatable moments in space and time that provided insights into the work observed.

Silverman (1998, 2006:109-200) suggests that there are significant limits, as well as advantages, to data collected via interviews and documents within the context of qualitative research. He argues that the researcher may put too much emphasis on the accounts generated by the methods over other methods such as participant observation and cautions that one should clearly articulate how interviews and documents contribute useful information (Silverman 2006: 145-146). As employed in this research, interviews and documents served a double purpose. On the one hand, they were used to extract key historical information – comparing multiple interview accounts of the same events as well as documents of the time of these same events – to produce what Star and Bowker (2000) call filiations. On the other hand, each interview and document, along with instances of participant observation were treated as narratives to be thematically analysed as units of coding (see annexes 3 through to 5) using specific thematic codes developed for each unit of analysis – namely the three career threads.

Such a two-fold approach to the analysis of data was inspired by Phillips and Brown (1993) who, based on the work of Ricoeur (1977) and Thompson (1990) among others, developed a hermeneutic approach to the study of meaningful artefacts in and around organisations. They proposed a process involving moments of analysis which allowed the researcher to uncover patterns of power and resistance within the organisation. Their method involved analysing a specific sample of texts using three discrete yet interrelated moments – socio-historical, formal, and synthetic. In the case of this research, I am less concerned with the interpretation of a specific sample of texts than with the overall circulation of meaningful conventions/standards relating to ICTs. Nevertheless, their methodology served as a useful template to engage with the body of research findings, specifically as it pertained to the construction of each career thread and their synthesis in a final moment of analysis. Each of the empirical threads consists of intertwining socio-historical and thematic analysis. The former moments extend beyond situated observations and develop context for the interpretation of meaning while the latter moments allow for the analysis of underlying themes relating to meaningful practices and discourses within the art world network. A third moment generated a hermeneutic circle that combined the two previous moments of each thread into a moment of understanding (see chapter 7). Generally, the methods used to collect data for the case study provided a progressive funnelling (Silverman 2001: 70) in time and detail enabling the construction of such moments: document analysis provided a wider historical context while participant observation provided a more detailed formal analysis of recent events.

The presentation of socio-historical moments comprised an historical account of events as part of a particular career thread. The objective in this case was to produce object/moment samples for thematic analysis (see below) by providing an extended context in space and time. Historical moments were produced through document analysis and accounts of the events taken from research interviews or participant observation (see annexes 3 through to 5 for a detailed list of data collected). The mapping took place through time as well as space. It was an exploration of the fluctuations of activity within the network. As the number of historical moments for each career thread expanded, certain "clusters" or entanglements of events, individuals, objects and texts took shape (ex.: Souillac Charter, collaboration, the Wimbledon School of Art, the MARCEL website).

The process of constructing these accounts involved compiling information using Invivo software which could then be organised into a number of units of coding. The large degree of variation in the number and type of units of coding collected made it even more unlikely that consistent samples across the research threads could be generated for formal analysis. Rather than a single formal analysis of one sample collected as a result of the historical construction, these units of coding were thematically analysed in order to identify and compare themes

across the three threads. The thematic analysis (Boyatzis 1998) represented an opportunity to construct themes relating to practices and discourses tied to actors, texts and technologies encountered in the field as part of the historical construction. It should be noted that the example given by Phillips and Brown employs semiotic theory for formal analysis. They suggest other formal approaches (Phillips and Brown 1993: 1563), but do not provide details for how to operationalize these other options nor how to combine more than one approach. What they stress is that '[a]lthough interpretation is always subjective, it is not subjective to the exclusion of an objectifying moment that can encompass any number of formal methods of analysis.' (Ibid: 1563). It could therefore be argued that thematic analysis of a combination of participant observation, document analysis, and interviews generated a kind of second-order analysis which may have resulted in an increase of subjectivity but also enabled comparisons across multiple units of analysis. I therefore chose not to limit the thematic analysis to one particular type of text and, instead, to apply the analyses to documents, field notes, and interview transcripts. This allowed for as rich a description as possible as is desirable in an ethnographic research (Silverstone et al. 1991).

The objective of the thematic analysis was to uncover the underlying practices or discourses developed in the conceptual framework that were circulated via the texts in question – the production of transparency through mediation, discursive spaces, the articulation of maverickness, and the classification of standards into art world conventions. Thematic coding was therefore mostly theory driven. Each career thread was defined as a unit of analysis and a set of sub-questions informed by the overall research questions devised for the analysis of data. Since all three units could not be compared along similar dependent or independent variables, a hybrid approach was deemed necessary (Boyatzis 1998:51-53). The sections below address each individual thread's historical construction, offer an in-depth account of how the empirical material for this study was analysed, discuss the sampling issues for thematic coding, and also provide a description of their units of coding.

3.6.1 Unit of analysis 1: Access Grid Career Thread – Mediating Access Grid conventions and standards

The following two questions informed the collection of data for the historical construction and for the units of coding for the thematic analysis of this thread:

Sub-question 1.1 : What is Access Grid (AG)?

Sub-question 1.2 : How is it mediated by artists through design and use and within which discursive space(s)?

These two sub-questions related, for the most part, directly back to the first part of research question II - How do artists engage with the mediation of digital information and communication networks? – identified in the conceptual framework but also to lay some of the ground work for answering research question III (see Table 1 below for a complete overview). An answer to sub-question 1.1 required that I apply the stratification model devised in section 3.4.2 over an extended period of time. Such an answer ensured that Access Grid was not "black boxed" as a discrete and immutable ICT. Sub-question 1.2 involved mapping Access Grid's mediation by the members of the art world network in an attempt to better understand its mediation by artists. A significant section of this career thread was an historical account of the design and use of Access Grid and the academic high bandwidth network prior to September 2005. The objective of this account was to provide a socio-historical context of Access Grid's career prior to its mediation by artists. The information for these moments was accessed through scientific publications generated by the Access Grid's designers or official websites related to the Access Grid community. (This includes available publications by researchers for the Argonne National Laboratory[22] and the Access Grid website[23]. Other documentation sourced included reports from SC Global conference documentation[24] and specific to the United Kingdom were documents from the United Kingdom Education and Research Network Association (UKERNA) now JANET (UK)[25], other resources included the Joint Information Systems Committee (JISC)[26] and the Access Grid Support Centre (AGSC)[27] based in Manchester, as well as the Arts and Humanities Research Council[28], its sponsored ICT Methods Network[29] and the Arts and Humanities e-Science Support Centre (AHeSSC)[30], see annex 3 for further details). Specific information about UK Access Grid design was also gathered thanks to autobiographical interviews with three early key proponents of Access Grid for the United Kingdom as well as a later proponent for the use of high bandwidth academic networks by the arts and humanities. There was a progressive funnelling of information towards a

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[22] See Online research documents: including Futures Laboratory (2004), http://www.anl.gov for website.

[23] See Online research documents: Access Grid (2007), http://www.accessgrid.org for website.

[24] See Online research documents: Oliverio, Quay and Walz (2001), http://www.sc-conference.org for official website.

[25] See Online research documents: Daw and Miller (2004), http://www.ja.net for official website.

[26] See http://www.jisc.ac.uk

[27] See http://www.agsc.ja.net

[28] See http://www.ahrc.ac.uk

[29] See http://www.methodsnetwork.ac.uk

[30] See Online research documents: Blanke (2006), http://www.ahessc.ac.uk for official website.

number of discreet moments of appropriation and conversion through Access Grid's use and/ or design by artists for the production of artworks.

Four telematic events were analysed as part of the second moment of historical construction. As stated in section 3.6, I did not benefit from participating in the "start-to-finish" production of a specific artwork. Because of this, formal moments dealing with artworks were subdivided into encounters that provided observations of certain themes. Each event was constituted as a separate encounter in which different formal properties of instances of Access Grid and the academic high bandwidth network were documented. These were not necessarily arranged in a chronological order but to construct a set of moments, 'scenes' if you will, between actors and technologies in time and space. Although such constructions provided limited information on their own, some of these encounters were also supplemented with descriptive accounts of activities by some of its participants either through their own documentation of events or through interviews. Visual documentation such as photographs and diagrams, when available, were also used to provide additional information. As I was an active participant in some of these encounters, some degree of reflexive observation was also provided in order to stress the subjective nature of the constructions. Direct participant observation of an Access Grid meeting and my personal account of first using Access Grid make up the first moment combined with document analysis of the Access Grid website. The second account was a combination of participant observation and interviews to see how artists and academic researchers in new media collaborated on the Access Grid platform. The two others are formal accounts of two telematic artworks produced with Access Grid by members of MARCEL. The material collected for these two moments consisted of interviews and document analysis of the events. Multimedia archives of the works developed were procured from the individual artists on DVDs in the case of both Melt and Streaming Tales. In the case of Navigating Gravity, documentation, including the artist's field notes, was made available on the artist's website. These encounters combined participant observation, document analysis and interviews. Information about the artists was collected via autobiographical interviews with actors who participated in MARCEL's first work with the platform at Wimbledon School of Art (5 interviews) and Ryerson University in Toronto, Canada (2 interview sessions with a total of 3 actors) and documentation.

All of this was undertaken in order to identify and examine the overarching situated process of mediation using thematic analysis. Practices and discursive spaces related to Access Grid's mediation were identified for each encounter. The artworks produced were not understood as discreet cultural content to be studied separately from the tools used for their production. Instead, this study focused on the work of producing transparency around the strata of the ICT including its media form and objects. The production of transparency was examined by

documenting offline spatial arrangements of Access Grid nodes and the work of creating an Access Grid event, and identifying the discursive spaces involved in the process of mediation. Thematic analysis therefore addressed the first and last questions about transparency posed by Star et al. in order to answer the two sub-questions. Namely: "For whom and when is a particular tool transparent?" and "How are new comers taught to make the tool, interface, or retrieval system transparent for themselves?" (Star et al. 2003: 242-243) as part of the examination of Access Grid's mediation.

As is the case with the description of the thematic analysis described in 3.6, much of the coding was developed as a dialectical process between theory and data collected from the field. A first sample of units of coding identical to the sample used to construct the first historical moments for this thread was employed to examine themes of transparency and to identify the discursive spaces related to Access Grid's design[31]. Understandably, most of these documents take a positive view of Access Grid as they were produced by those who designed the platform, leaving little incentive to provide critical assessments of Access Grid's properties. The goal, however, was to identify the ways in which Access Grid was meaningfully designed by its creators: where it was intended to be used, by whom, and for what purpose.

The second sample of units of coding focused on Access Grid's subsequent mediation by artists and other art world actors for the four telematic encounters. Once again, samples were more than likely skewed towards a relatively positive assessment of the resulting artwork as there existed few accounts of audience, stakeholder or other gatekeeper reactions. Once again, however, the objective was not to generate a critical judgement of the overall artwork itself but to examine accounts of artists and other art world actors when working with Access Grid for the production of telematic artworks in order to better understand the mediation process. The scope of the analysis was further refined to focus on two themes: 1) the theme of distance related to transparency – principally since distance represents a key component of telematic artworks, and 2) the theme of flexibility as a means for artists to "do what they want" with one or all of the related media units[32].

3.6.2 Unit of analysis 2: Don Foresta Career Thread – The artist's conduct of maverickness as it relates to ICTs

The following two sub-questions informed the collection of data for the historical construction and for the units of coding for the thematic analysis of this thread:

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[31] See annex 3 for a detailed list of the units of coding and thematic codes for this career thread.

[32] See annex 3 for a detailed list of the units of coding and thematic codes for this career thread.

Sub-question 2.1: Does Don Foresta articulate a conduct of maverickness in relation to the artist's design and use of ICTs? If so, how?

Sub-question 2.2: Does this maverickness extend to other members of the art world network?

Both sub-questions are closely related to research question I as they deal directly with the identification and analysis of maverickness. But together, they also set the stage for an answer to research question III in that they begin to address the ICT and the artist's ability to conduct maverickness. The thread was constructed as an historical narrative of Don Foresta's work, background in art worlds and his eventual work with the MARCEL Network. It includes an account of his work in defining the artist role through his past publications, artworks, and other projects generated through document analysis and interviews with the artist and colleagues. The objective was to provide an historical account of the artist's career leading up to and including his time as coordinator for the MARCEL Network and to describe how his role as an artist, specifically the conduct of maverickness, was articulated over time.

Much of the information in this section was collected by consulting 51 documents including publications by the artist, conference transcripts and past interviews between 1974 and 2008 (see annex 4). Most of these documents were collected from his website. The website itself was understood as an autobiographical representation similar to the autobiographical interviews. Several hundreds of pages of archived material collected by the artist spanning the period spent working at the Wimbledon School of Art were also used. The Wimbledon archive included drafts of funding applications, promotional documents for events, and correspondences between individuals (see annex 1 and 4). Also included in the archive was documentation of the work done at Le Fresnoy as well as archived material from the MARCEL Network members including documentation on past events, project notes and correspondence. These documents were retained to provide confirmation of historical accounts of events. Information collected over the course of 19 autobiographical interviews with the artist (four of these interviews were conducted with Don over the course of the field work, see annex 5) and other individuals who worked with Don Foresta provided a further corpus for this analysis. These interviews took the form of semi-informal autobiographical descriptions of their careers, specifically their time working with MARCEL, with Access Grid and/or with Don. Individuals were invited to recount their career as media artists and therefore these interviews were not explicitly produced as accounts of their work with Don Foresta. Interviews with the other 15 interviewees were semi-structured and related to their autobiographical experiences relating to their use of Access Grid or their contact with Don and the MARCEL Network. Part of the aim of these interviews was to gain a clearer picture of their professional and personal rapport

to Don Foresta which ran the gamut from no relations whatsoever to working closely together over extensive periods of time.

A few caveats about the structure of the artist's career thread: First, I necessarily overlooked a considerable part of Don's formulation of the artist's role that did not relate to technologies. Although ICTs were integral to his formulation of art and artistic practice, the subtleties of his work on the relationship between art and science, among many other philosophical investigations, could only be summarily examined here. Encounters during the course of this study have taught me that emphasising technological aspects of artistic work can lead to accusations – directed towards the artist or directed towards the researcher – of being "too technical", too technologically deterministic or too concerned with form over content. Nevertheless, the relationship between the role of the artist and the artist's design and use of ICTs held a significant enough place in Don's career that such an in-depth investigation seemed warranted and, of course, it was necessary in the light of the research questions posed for this study.

Second, by representing a career through a timeline, I risked representing Don's articulation of the artist/ICT relationship as a progression that led towards a refined state of perfection or error. The trajectory was temporal but not necessarily causal: it did not predetermine the following moments. To avoid generating such an impression, the first analytical moment therefore consisted of a more recent examination of events encountered through my participant observation.

Third, I did not present a psychological profile of the artist as this study was not concerned with the artist's psychological motivations. I did provide some basic information about Don's life history but this was offered as a part of his own reflexive understanding of the artist's role. Conversely, the interpretation of the artist role in the study was linked to my own subjective understanding of art and artists. I had studied visual art and design for my undergraduate diploma and have entertained the idea of returning to the practice of art making. I have viewed some of the art projects with a hint of envy that I have not had the opportunity to execute them myself. However, I tried in my analysis to reflexively work with these experiences or to signal such pre-understandings.

As a fourth and final caveat, as with the Access Grid samples, I ran the risk of research bias through the samples selected for the thread since texts and accounts were, for the most part, produced by the artist himself or were selected by the artist. Such a selection most likely promoted a positive representation of the artist's work. It should therefore be noted that the objective of the thematic analysis in this particular career thread was not to analyse the work of producing artworks but the way in which the artist articulated a relationship with the technologies designed and used to produce those artworks: this was not an attempt to determine

whether or not the work contested established art world conventions, but to assess whether and how the work should contest established conventions according to the artist.

The socio-historical development of the career was punctuated by formal encounters with texts and biographical accounts expressing the artist/technology relationship. I sought to identify moments for deeper thematic analysis looking for the articulation of the conduct of maverickness in relation to ICTs. Maverickness was developed as a form of artistic conduct in chapter 2. A thematic analysis was deployed for this career thread to identify its particular articulation as it pertained to the artist's conduct of a relationship with ICTs. I subsequently extended this analysis to other art world actors' accounts over the course of the research.

Developments in time identified in the historical construction and the stratification of media units guided the development of subsections in the sample of units of coding: pre-artist moment (no documents found), video-art moment (17 documents), telematic moment (23 documents) MARCEL moment (11 documents). In addition to the units of coding in this last subsection, field notes from participant observations were also used. The labels for the thematic codes were maverick designer role and maverick user role with their opposites, namely conventional designer role and conventional user role also tracked[33].

3.6.3 Unit of analysis 3: MARCEL Thread – Classification in the art world network

The following two questions informed the collection of data for the historical construction and for the units of coding for the thematic analysis of this thread:

Sub-question 3.1: How does classification work take place within the MARCEL Network?

Sub-question 3.2: How is AG classified as a part of the MARCEL Network?

These questions address the second part of question II and complete the answer to question III which the two previous threads began to address. This thread includes an in-depth account of the events leading up to the creation of the MARCEL Network. The historical construction extended into early classification work conducted by Don Foresta, Georges-Albert Kisfaludi and other future MARCEL contributors which anticipated the creation of the MARCEL Network, followed by an analysis of the classification work involved in the creation of MARCEL. It then delved into two specific projects taking place within the network: 1) the design of the MARCEL website including participant observation of the construction of its third version and 2) the recruitment activities surrounding a group of United Kingdom artists. Other information used to construct this thread was generated via document analysis of publications

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33 See annex 4 for a detailed list of the thematic coding and units of coding for this career thread.

relating to the Souillac conferences (Foresta and Barton 1998, Foresta et al. 1999), meeting transcripts, correspondence archived by MARCEL members and other documents relating to the website's construction collected in the Wimbledon archive and at Le Fresnoy, as well as interviews with four of the original individuals who initiated the first two Souillac events and document analysis of archival materials. These two projects were not the only projects encountered over the course of the field work. Other past and present projects included AL-TERNE[34] and Global Threads[35] as well as a host of related funding applications and meetings. The two events were selected for three reasons: 1) activities relating to the two projects spanned the entire period of field work, 2) they provided a sufficient amount of data for all three methods, and 3) the two other career trajectories coalesced in both projects.

Thematic analysis in this thread was used to identify the kinds of classification work taking place in MARCEL. Rather than attempting to develop a classification system from the outside in order to describe and analyse the art world network's activities, I examined the reflexive classification work conducted by the participants in the art world network itself, particularly as it related to "collaborators" and "collaborations" (see section 6.1) focussing on the identification of lists registering 1) members or participants in collaborations, 2) technologies involved collaborations, and 3) collaborative projects. One of the principle objects of research on which Bowker and Star (2000: 107-133) focus for their research on the International Classification of Diseases are the lists generated and circulated for the collection of information. A similar infrastructural inversion was employed in this case to analyse how categories were mobilised as part of classification work. Lists functioned as an inversion of how Crane (1987: 153-158) constructed art world networks from instances in articles provides for the reader a sense of a network activity and its relevant participants (a list of names, a number of members, etc.). Instead of generating lists myself in order to produce the structure of the art world network, I looked for the lists produced by the art world network participants as markers of their own construction of the art world network[36].

The first sample of lists was gathered from the same unit of analysis used in the Don Foresta thread. This first sample was selected in order to track classification work prior to MARCEL activities and also to ensure some continuity between the Don Foresta thread and the MARCEL Network thread. The second sample of lists was generated from documents and websites identified over the course of participant observations and interviews for the period between the first Souillac meeting in 1997 and the completion of the fieldwork in 2008 (see annex 5).

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[34] See Online research documents: Alterne (2005).

[35] See Online research documents: Foresta (2007).

[36] See annex 5 for a detailed list of the thematic codes and units of coding for this career thread.

Lists were selected based on whether they were produced by MARCEL network participants and whether it was possible to determine the date of its production (to the nearest month).

This research thread was initially designed as a means of triangulating the observations made in the two career trajectories in order fully to answer the research questions. I had anticipated that thematic analysis of the classification work over such an extended period of time would provide insight into the participant observations collected during the field work of MARCEL Network collaborations. The initial intent of this design was as a means of analysing whether and how MARCEL artworks were employed to classify Access Grid standards as art world conventions. However, as will be developed in the thread, much of the classification work conducted prior to and during the participant observation was quite different from what had been anticipated.

3.6.4 Synthetic analysis

Table 1 below provides an overview of how each of the six sub-questions generated in the three previous sections for each of the three threads relate to the three research questions generated by the conceptual framework (see chapter 2, section 2.5):

Principal research question: How do artists design and use digital information and communication networks for the production of artworks?

Table 1: An overview of the six empirical sub-questions and how each relates to the three research questions

		RQ I	RQ II	RQ III
First research thread: ICT's career	*Sub-question 1.1 : What is Access Grid (AG)?*		Specifically addresses the first part of RQ II by mapping AG's design.	
	Sub-question 1.2 : How is AG mediated by artists through design and use and within which discursive space(s)?		Analyses how and where MARCEL artists mediate AG.	Looks to the conversion of media forms and objects into artworks as a means of generating/ contesting conventions out of AG standards.
Second research thread: Artist's career	*Sub-question 2.1 : Does Don Foresta articulate a conduct of maverickness in relation to the artist's design and use of ICTs? If so, how?*	Analyses Don Foresta's articulation of the conduct of maverickness.		
	Sub-question 2.2: Does this maverickness extend to other members of the art world network?	Looks to wider collective articulation of maverickness in the art world network.		Analyses the wider circulation of maverickness among art world network actors.

Third research thread: MARCEL Network	*Question 3.1: How does classification work take place in the MARCEL Network?*		Analyses the meaningful classification of new media standards into art world conventions.	Looks to the classification of media forms and objects as artworks as a means of generating/ contesting conventions out of AG standards.
	Question 3.2: How is AG classified as a part of the MARCEL Network?		Analyses if and how AG acts as a meaningful convention within the art world network.	

As part of the research methodology, a final moment of "interpretation-reinterpretation" (Phillips and Brown 1993) in chapter 7 completed the analysis. This chapter was divided into two main sections: an initial analysis of each of the career threads in which I attempted to definitively answer the research questions, followed by a synthesizing analysis in which each of the three threads is recombined in order to answer the overall research question.

3.7 Conclusion

Sections 3.2 and 3.3 of this chapter have devised a way to operationalize the conceptual framework set out in chapter 2 by unpacking the network metaphor into a series of career threads. Section 3.4 then presented the selected case study and the challenges facing the researcher and the particularities of the subject matter that arose in the early stages of field work. The chapter then developed the main methodology for the research, that is, ethnography (section 3.5) and the analytical tools mobilised to interpret the data in order to answer the research questions (section 3.6).

Chapter 4

AN ICT'S CAREER AS A CONVENTION FOR ARTISTIC EXPERIMENTA-
TION - HIGH BANDWIDTH AND ACCESS GRID

4.1 Introduction

The objective of this chapter is to provide an in-depth analysis of the career of a specific ICT as an artist's convention for the production of artworks within an art world network: the MARCEL Network. By following an ICT's career, this chapter provides an understanding of the dynamic process of mediation, by actors, technologies and the discursive spaces of social worlds over an extended period of time. As indicated in section 3.4.2, the ICT subjected to analysis is stratified according to a model inspired by John December's (1996) units of analysis in order to identify the transparencies of the standards surrounding its design and use.

The chapter begins in section 4.2 with an historical account of the origins of the ICT as a media form. The section progressively focuses on the ICT's eventual appropriation by artists in order to produce works of art. This provides a contextual mapping of the design of the artefact as an online and offline media form as well as a media object and formulates the needs and desires of the artists who appropriate it for artistic production. The following sections, 4.3 and 4.4, are accounts of Access Grid's design and use as a convention for artistic production using participant observation in combination with interviews and document analysis.

4.2 The Grid, Access Grid, and high bandwidth collaboration in academic research and artistic work

4.2.1 Academic high bandwidth networks for scientific research

The concept of the Grid, or what has also been called meta-computing, or in some cases referred to as cloud computing, was developed to describe "coordinated resource sharing and problem solving in dynamic, multi-institutional virtual organizations" (Foster et. al. 2001: 2). An example of Grid computing is the sharing of data and testing facilities for earthquake engineering on a national or international level via the Network for Earthquake Engineering and Simulation program (Kesselman et al. 2004). It became widely employed in the mid-1990s to

describe the sharing of digital resources over high speed networks. The main action for the proponents of Grid computing was the creation of standards through which any large research computer could access the resources of other large research computers. The Grid was often likened to an electricity grid or a railway network (Foster and Kesselman 1999, Smarr 2004). Recently, this analogy was deployed to argue for public funding and to stimulate commercial interest and investment:

"Grid computing would make tremendous computing power available to anybody, at any-time, and in a truly transparent manner, just as, today, the electric power grid makes power available to billions of electrical outlets." (Abbas 2004: 45)

But the metaphor of the electric power grid, for some, did not do justice to the potential flexible computing made possible by grids:

"The term "Grid" was selected to describe this environment as an analogy to the electric power grid, that is, a large-scale, pervasive, readily accessible resource that empowers multiple different devices, systems, and environments at distributed sites. However, this metaphoric description of the Grid as a set of ubiquitous utility services may overshadow its versatility – its potential for flexibility and reconfigurability. General utility infrastructure is usually designed to deliver a single service, or a narrow range of services. Those services are to be used in the form in which they are delivered. The power Grid is based on a rela-tively fixed infrastructure foundation that provides a fairly limited set of services, and its underlying topology certainly cannot be dynamically reconfigured by external communities.

In contrast, the information technology Grid can be used to create an almost unlimited number of differentiated services, even within the same infrastructure. The Grid is an infra-structure that provides a range of capabilities or functions, from which it is possible for mul-tiple distributed communities, or individuals, to create their own services.
(Mambretti 2006: 6)

Grid computing represented a flexible set of standards to pool the resources of many different sources into specific research projects[37]. Its potential in the United Kingdom, for example, became widely disseminated over the following decade. The rhetoric for more rapid and effi-cient access to computing power for education and other public services spread through gov-ernment and the private sector (Selwyn 1999). Many of the arguments driving the develop-ment of the Grid embraced the technologically deterministic view that larger shared comput-

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[37] See Online research documents: Foster (2000)

ing capacity would translate into more sharing of information and therefore more scientific and commercial breakthroughs (Foster and Kesselman 2004: chapters 1-3). But this sharing of information was distinguished from other Internet forms such as the World Wide Web:

The sharing that we are concerned with is not primarily file exchange but rather direct access to computer, software, data, and other resources [...].This sharing is, necessarily, highly controlled, with resource providers and consumers defining clearly and carefully just what is shared, who is allowed to share, and the conditions under which sharing occurs.
(Foster et. Al. 2001: 2)

University networks employed this type of sharing over high bandwidth early on. Examples include JANET[38] in the United Kingdom and Internet 2[39] in the United States. The Grid's design as a media form was therefore a kind of flexible yet controlled digital information network for scientific collaboration and information sharing within academic and research institutions. According to its designers, this control depended on its participants conforming to certain standards and protocols in order to enable flexible experimentation relating to scientific research.

4.2.2 Putting a Face to the Grid: Designing Access Grid

One of the main categories of applications to be developed for Grid Computing included applications that would support the communication and 'collective collaborative work between multiple participants'(Foster & Kesselman 1998: 22). Access Grid, as it would come to be known, was one of the applications developed to enable this type of work online.

In 1994, members of the Futures Lab, a subdivision of the US Department of Energy funded Argonne National Laboratory, began exploring the possibilities of connecting multiple immersive and semi-immersive virtual environments with network technologies (Stevens et al. 2003). Tests began on ways to make such connections and to develop the necessary hardware and software. In collaboration with American universities it developed an online videoconferencing application that would enable researchers to collaborate online in real time and with greater flexibility (Childers et al. 2000, Stevens et al. 2003).

Arguably, teleconferencing or videoconferencing between distant sites in order to collaborate was hardly anything new. Carmen Egido suggests that conceptual designs for videoconferencing were already discussed by researchers in Bell Labs in the 1920s and successful prototypes of 'picture phones' were already in use by the early 1970s (Egido 1988). What was innovative about Access Grid's design relative to previous platforms was its ability to connect multiple

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[38] See http//:www.ja.net

[39] See http://www.internet2.edu/

sites simultaneously using multiple connections (see below) in what its designers described as a semi-immersive environment. Access Grid was designed as a solution for online collaboration that was not fully immersive in the way that a fully immersive Virtual Reality (VR) environment would have been. Its proponents felt that a 'well-designed physical space that has comfortable seating, excellent lighting, variable lines of sight, multiple work surfaces, and a flexible layout' (Childers et al. 1999: 3) was better suited to collaboration than VR. Access Grid's designers argued in publications at the time that VR took far too much computing power to utilize effectively and was not well-suited to intuitive group-to-group collaboration between scientists. These semi-immersive spaces would, in turn, allow other ICTs such as laptops or similar hardware to connect to the videoconference, sharing collaborative work and resources.

The designers at Futures Lab set out to design Access Grid with a series of assumptions about the future of ICTs. Available documents suggest they believed that, as technological progress would continue to advance and prices for digital peripherals would continue to decrease, digital technologies, particularly networking technologies, would become less tied to desktop use and become more embedded within the physical fabric of society:

> *We certainly believe that rooms of all types will become one of the next application environments to be explored (along with automobiles, aircraft interiors, luggage, and the personal environments people carry with them). An essential point here is that we recognize that it will be possible to integrate substantial technology into the physical environment; the important questions are what type of technology it will be and how the integration will work. In our current and planned experiments, we are focusing on integrating cameras, projectors, microphones, speakers, screens, and tracking systems. However, we expect in the future to increase the number of environmental sensors and controls; we also expect to include lighting, seating, interactive work surfaces, and boundary (door and window) sensors. These devices will be built into the space and become a permanent part of the environment. (Childers et al. 1999: 5)*

Its design was based on the expectations of future developments in bandwidth, prices and the increased availability of technologies. The emphasis, therefore, was to design a set of applications which would enable group-to-group collaboration within a semi-immersive virtual environment while betting on the expectation that the hardware and software it utilized would become less expensive, ubiquitous and embedded within the physical environment. In this design, a more focused articulation of a "flexible" network emerged compared to the earlier articulation of flexibility applied to the Grid. With Access Grid, collaborative scientific work was mediated in a physical space where "flexibility" related to the contingencies and demands of spatial configurations.

4.2.3 IP Multicast

The design expectations for Access Grid to provide semi-immersive collaboration had 'the highest aims in mind' (University of Wales Swansea 2004: 4) in that bandwidth could not be an issue for streaming synchronous video and audio. A significant early aspect of Access Grid was its use of Internet Protocol (IP) Multicasting to stream information such as video and audio. The concept of Multicast itself had been discussed among computer engineering circles since the 1980s (Casner 1994, Williamson 1999: 7) and tested since the early 1990s (Eriksson 1994). A basic description of Multicast is that, rather than enabling the transfer of a packet of information from one individual to another individual (unicast) as is the case with most current online Internet activity, it enables the transfer of packets from one individual to many specific individuals without indiscriminately transferring files (broadcast) (Kreibich 1995).

IP Multicast uses Internet Group Management Protocol to form groups. One way to describe multicast is to compare it to the broadcast or unicast models of distribution. Simply put, the broadcast model is composed of one sender sending a message indiscriminately to anyone who can receive it. Unicast describes a more conventional IP model for online communication in which an information packet is sent from a single sender to a single receiver (Eriksson 1994). IP Multicast is different from both of these models in that it enables users to join a group on a specific IP address from which they can receive all incoming information. It also lets an individual sender choose the receivers he or she wishes to send the information to. This allows the sender to send the information only once while quickly reaching all of those who have requested that information (Handley & Crowcroft 1999). This represented a considerable advantage when sending video (Turletti & Huitema 1996) or audio signals since it was possible to send multiple streams of video and audio to those who had requested them without taking up too much bandwidth. It made bandwidth use more efficient and could also reduce lag, the time difference between the sending and receiving of information, in video or audio streaming.

In the early 1990s, multicast was only available on what was known as the Multicast Backbone – also known as the MBone – network (Macedonia and Brutzman 1994): a virtual online network of multicast enabled routers (Eriksson 1994). As IP Multicast began to spread, it was adopted by parts of the academic networks and some private networks. Although it became more widely available by the end of the 1990s, it was still not reliably available to the general

public[40] or even to many academic institutions. The solutions provided by multicast would later become a standard feature of Internet Protocol version 6 (IPv6)[41] and were therefore expected to become far more common as this version is deployed (Tadjer 1998, Weiser 2001). But IP Multicast did present a few problems. From a technical standpoint, besides being somewhat inconsistently available, a common issue was the use of firewalls (computers that function as security gateways between intranets and the Internet) whose settings often blocked incoming or outgoing multicast traffic (Finlayson 1999). As will be discussed further in chapter 5, section 5.8, IP Multicast's affiliation with IPv6 and those who supported its implementation affected the way Access Grid's reputation among some artists.

4.2.4 Building Access Grid nodes

The physical rooms where Access Grid's semi-immersive collaborations took place, what in Access Grid jargon are designated as "nodes", were soon found in university departments across the world[42]. Access Grid integrated a varied set of media spaces into a 'toolkit' that were familiar in computer science circles including Video Conferencing Tool, otherwise known as VIC[43], for video streaming and the Robust Audio Tool, RAT, for audio transmission. Both of these media tools had been developed with the support of university departments in the United States and United Kingdom and were made widely available to those using IP Multicast (Xia et al. 2006). The use of existing hardware such as digital projectors, as well as video and audio input/output units contributed to the perceived level of flexibility in the physical installation of an Access Grid node. By enabling projectors to "tile" up to four video projections[44], it was possible to have a relatively large enough visual display to cover an entire wall and comfortably put on view "12 sites or more"[45] during a meeting.

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[40] For those wishing to connect with Access Grid who do not have access to multicast, it is possible to "bridge" the connection with supporting organisations who provide this service. The Access Grid Support Centre at the University of Manchester is the UK's provider of this service. Such services are, however, mostly for temporary support to those who do not yet have access to multicast rather than a permanent service. (http://www.agsc.ja.net/services/virtualvenue.php & http://www.agsc.ja.net/services/multicastbridge.php)

[41] "Current IPv4 addressing supports a worldwide total of 2 billion addresses, but only a fraction of that number is available (10-100 million) because of partitioning of the space for administrative purposes. The current version, IPv4, will be replaced with IPv6, with its larger [10 to the power of 38 addresses] space. This new IP provides additional addressing paradigms, akin to multicast, that enrich the overall architecture as well." (Touch and Postel 2004: 646). At the time of writing, IPv6 had not been implemented globally.

[42] See Online research documents: Access Grid (2007)

[43] See Online research documents: McCanne and Jacobson (1995)

[44] See Online research documents: Daw and Miller (2004)

[45] See Online research documents: Daw and Miller (2004: 5)

Most of the Access Grid nodes were spatially configured with a station for a 'node operator'; what has also been called a 'driver'[46]. This was a place within sight of the projection screens that allowed the node operator to maintain the connection and modify aspects of the Access Grid session such as resolving connection problems or modifying the display of the Access Grid windows on the projection screens. Backchannels for these 'drivers' were also designed either using an integrated text chat tool on Access Grid or other web based chat interfaces such as Jabber. This afforded the different node operators of participating nodes the chance to communicate with each other during an Access Grid session without interfering with the actual event. A combination of these media objects is what was generally called an Access Grid platform. The Access Grid Tool Kit was the open source version of the application while a commercial version provided by inSORS founded in 1998 (later renamed IOCOM in 2007)[47] was also available.

Access Grid's design resulted in an open source collection of applications that allowed individuals or groups of individuals to connect via online rooms, each with multiple video and audio streams as well as the ability to collaboratively use software applications in real time (Childers et al. 2000, Stevens et a. 2003). (A basic example: a node could stream a digital slide presentation simultaneously with the audio and video streams for a videoconference.) It was estimated that building a small Access Grid node in 2001 cost a total of $42,450 (US) including: computing equipment, network equipment, other computing hardware such as monitors, audio system, four video cameras, and projectors[48]. This list of items constituted a standard Access Grid node design. It should also be noted that this amount did not include the annual cost of connecting to a high bandwidth research network such as JANET which could easily match the cost of the node itself[49]. Designers in university computing departments were not faced with such considerations when designing a node because of the connection provided by the university (see section 4.2.4 below).

One could also design an Access Grid installation providing access through a desktop computer, known as a Personal Interface to the Grid or PIG. Although PIGs were considerably cheaper to build (using a simple digital camera, headphones equipped with a microphone, and a desktop computer, see section 4.4.1) they were not classified as full nodes since they did not provide semi-immersion. Access Grid's initial design objective to help users 'escape the tyr-

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[46] See annex 2 – image 2.1 and 2.2

[47] http://www.iocom.com/io/index.html

[48] See Online research documents: Olson (2001)

[49] The 2007 tariffs for a basic connection to JANET in the UK start at £14,000 and can reach £44,000, not including installation charges. See Online research documents: UKERNA (2007)

anny of the desktop'[50], meant that its installation on a desktop ran counter to its designers' initial intent.

The second version of the Access Grid platform (AG2 –more recent versions have been released since), released in May 2003[51] , implemented an even stronger spatial metaphor by mapping virtual venues to specific IP Multicast addresses (Steven et al. 2004). The objective in developing these virtual venues was to:

"Support a peer-to-peer model that operates in much like the Web, in the sense that anyone can host a server (a virtual space) that anyone on the network can visit." (Ibid: 193)

The consistency of the virtual venues provided users with the opportunity to meet in the same venue and share files and presentations. Access Grid's new design strengthened an online/offline spatial arrangement consistent with its initial conception as a semi-immersive space for videoconferencing and online collaboration of groups of people (Ibid 2004).

In a sense, Access Grid was designed by expert research scientists for use by expert research scientists. Access Grid's specific properties, such as multicast, limited its use and development to scientific users within academic or research organisations with access to a high bandwidth academic network. This limitation was initially unproblematic because it fit with its designers' objectives and assumptions. Flexibility, informed by the specific preoccupations of academic research, steered the direction for Access Grid's design. However, its design was also conceived with the expectation that, over time, it could eventually become available to non-academic social worlds or non-research-led individuals and organisations. This, they felt would be possible thanks to expected economic and technological transformations accompanying progress towards the information society:

"Our vision of the Access Grid reflects the belief that, within the near future, bandwidth, computing, and imaging power will become effectively free and that high-quality audio and video capture will be increasingly inexpensive." (Steven et al. 2004: 199)

Because of the degree of flexibility of Access Grid as articulated in the diverse mix of software used in conjunction with the platform as well as in the hardware configurations that could be used to build an Access Grid node, it is difficult to define Access Grid as a media space with a set of standard protocols and practices. Nevertheless, standards such as the distinction be-

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50 See Online research documents: Jacque (2001)

51 See Online research documents: Access Grid (2007)

tween an Access Grid node and a PIG, connections over multicast (as opposed to bridging) relating to the media forms design and use did emerge.

Access Grid's design also arguably emerged within a particular physical environment, one that was key to its mediation of "semi-immersive collaboration". Although much of this work involved the design and use of an ICT and, therefore, related to a new media social world, this space of collaboration was a space for academic, specifically scientific, research and experimentation. The following section maps out some of the discourses tied to such spaces by focussing on the case of the first Access Grid node in the United Kingdom.

4.2.5 The first Access Grid node in the United Kingdom

The Computing Department at the University of Manchester was the first to set up an Access Grid node in the United Kingdom. John Brooke, who was director of the Manchester Research Centre for Computational Science (Manchester Computing) at the time, explained in an interview how his first encounter with Access Grid, which took place in 2000 at the Super Computing (SC) Conference in Dallas, was enough to convince him to build a node in the United Kingdom:

JB[52] - "I immediately recognised the intention of it because of the work I had done in the mid-1990s. Because they were using the same tools, they were using multicasting, they were using VIC and RAT. But it had this very nice idea which I thought was very elegant: was these virtual rooms. And they also incorporated other things which I thought were quite exciting like... instant messaging, metaphors from games, they were using "Dungeons and Dragons" at the time. And I thought that that was a very good way of people keeping oriented. Because one of the things I think people do when they use these remote forms of communication is that they become disoriented. It's very easy. Particularly as the technology at that time hadn't got all of the refinements which one would want. Things like visual cues as to who's talking and your place in the array of windows. And things like that. And we had all sorts of interesting things like people kept on sort of coming in because they just found a room and there was a meeting going on. So...[laughs] there was other things like having encryption and having rooms you could lock and stuff like that which you could see and you would want to add to it. [...]

But it was enormously exciting I thought. And I thought it was very complimentary to the Grid stuff because it was creating, if you like, a grid of people rather than a grid of machines." (John Brooke, 5 March 2007)[53]

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[52] JB will henceforth refer to John Brooke in interview transcripts.

[53] The interview with John Brooke of Manchester Computing was conducted at the University of Manchester on the 5 March 2007.

AG was at once a collection of familiar and standardised media forms and objects combined in an 'interesting' way that also represented a collection of potential research opportunities for Manchester Computing. Upon returning to the United Kingdom, the Manchester Computing Department was able to raise enough money from the University and from the UK eScience programme in order to build a first node[54] in time for the SC Global 2001 Conference.

> *JB - And we got the money together by a variety of means. Partly through the University of Manchester; I persuaded them that in a few years this would be a service. Part of it was donated by the directorate of UK eScience, Tony Hague, because he wished to, if you like, use this as a test case to see if it would indeed be useful. Because the UK eScience program would need something like this. So we did get a node. And we got it commissioned for September 2001. (John Brooke, 5 March 2007)*

Access Grid's emergence as a standard for online scientific collaborative experimentation co-incided with a concerted effort on the part of the academic research world in the United Kingdom to fund research using digital information and communication networks. By 2001 the United Kingdom's research councils and the Department of Trade and Industry had signed an agreement to create '[...] one of the first national programs to strongly encourage e-Science uptake among the applied research community' (Newhouse and Schopf 2007: 312).

Manchester Computing, with outside academic support, was able to initiate a process of appropriation of Access Grid in order to experiment with a design for its own set of research experiments. Even at this point, with the expertise at hand, the Access Grid node at Manchester University could not get consistent IP Multicasting and needed to take precautions in order to ensure a stable connection[55]. The first widely viewed international artistic event over Access Grid, Dancing Beyond Boundaries, took place during SC Global 2001. The event was initiated by the University of Florida and combined musicians and dancers from South and North America in a live performance.

As of August 2007, the official Access Grid site had registered 205 nodes from around the world mostly located in Europe, North America and Australia. The actual number of active Access Grid nodes and PIGs was more than likely significantly larger. Manchester Computing was home to what was known as the Access Grid Support Centre (AGSC) whose principle stated objective was to provide:

> *"[...] a single point of contact for UK educational and research communities when they need assistance on any aspect of Access Grid. This support can be in the form of resolving*

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[54] See annex 2 – image 2.2

[55] See Online research documents: Brooke (2001)

technical issues, answering queries, providing unbiased procurement advice or assisting with events management. On issues where help cannot be provided directly, we will make every effort ensure that users know where they can go for answers."[56]

A considerable amount of attention (and resources) was eventually dedicated in the United Kingdom to exploring the possible benefits of Access Grid as a collaborative tool for researchers in fields other than pure science. Efforts went into defining the grid as a resource for education and academic collaborative research in the social sciences and the arts and humanities[57]. As a part of this initiative, the United Kingdom's Arts and Humanities Research Council (AHRC)[58] in collaboration with the Engineering and Physical Sciences Research Council (EPSRC) and the Joint Information Systems Committee (JISC) began implementing and funding a series of schemes to develop the research potential for Grid technologies such as Access Grid such as the Arts and humanities e-Science Support Centre (AHeSSC). Part of the work of organisations like the AHeSSC was to develop a clearer picture of the needs and challenges facing those who might use Grid technologies for academic research in the arts and humanities. But these initiatives were still directed towards the academic research community and the resulting tests by artists using Access Grid to produce artworks within the academic context provided mixed results. As Sheila Anderson, one of the AHeSSC researchers explained:

> *[...] I don't think that the AG is as robust as it could be and I think that one of the things we could bring from the arts... And the humanities... It's just that it's particularly from the arts... Is to push, push the AG as far and to say: "Well actually, we need it to do X, Y and Z." So I know that there's, you know, there's music scholars working with it and saying: "Well actually it doesn't meet our needs because we can't ...You know, you get these slight delays and that messes things up if we're trying to do collaborative music development over the AG. (Sheila Anderson, 22 May 2007)[59]*

Access Grid was partly deemed not 'robust' enough for certain kinds of artistic productions (see below for a more detailed discussion). However, the AHeSSC could then articulate support for such productions as 'experiments' in testing the limits of Access Grid's potential. In Sheila Anderson's example above, the artist was presented as one able to express certain

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[56] See Online research documents: (Van de Langeryt 2008)

[57] See Online research documents: Woolgar (2003)

[58] See http://www.ahrcict.rdg.ac.uk/activities/e-science/ and its predecessor, the Arts and Humanities Board.

[59] The interview with Sheila Anderson of the Arts and Humanities e-Science Support Centre was conducted in the offices of King's College London on the 22 May 2007.

needs relating to Access Grid's use. In short, this suggested that the Access Grid platform was articulated by these new players as a potentially useful media form for a different kind of academic research, one that highlighted the value brought by the arts and humanities to the design and use of ICTs. Funding for Access Grid research by the AHeSSC was therefore still tied to academic research developed by the computer sciences such as usability studies and technical experiments. Access Grid still served as a tool for exchange and experimentation developed to support scientific academic research within scientific and academic spaces such as universities and research labs.

Access Grid's dissemination within the United Kingdom was therefore arguably tied to a specific kind of discursive space: that of academic research. This specific case also introduces a particular kind of process of appropriation which some of those encountered over the course of the field research explicitly referred to as experimentation or research. Access Grid's introduction into academic spaces involved testing its capabilities and potential, even for those who were not scientists, that was to some extent consistent with its designers initial conceptualisation of the media form as 'flexible'.

4.3 The MARCEL Network and Access Grid

Disentangling individual or collective work with either Access Grid as a platform, high bandwidth, semi-immersive collaboration and artistic genres as art world conventions over the course of the field work was difficult because of the way all of these objects and practices were articulated in different ways. The terms Access Grid and high bandwidth were occasionally used by the members of the MARCEL network and other individuals to describe any multicast or videoconferencing platform or digital network, respectively. Asking an artist to describe how he or she 'used AG' instead of how he or she 'made telematic art' seemed analogous to the difference between asking a painter how he or she 'uses a specific paintbrush' instead of how he or she 'paints' in that it was often too specific a question.

Before exploring the history of the MARCEL Network's design and/or use of Access Grid to coordinate and produce online artworks, it is necessary to first develop a set of art world conventions known as telematics as a set of existing conventions that informed the use of videoconferencing practices for art. As will be shown, these art world conventions made out of Access Grid and high bandwidth promising candidates for artistic conventions.

4.3.1 Conventions of telepresence: designing spaces and media objects for media art experiences

Telepresence or telematic art are terms that have been used by media artists since the early 1980s. According to the "Art and Communication Glossary" published by Leonardo telemat-

ics was "first coined by Simon Nora in the late 1970s" and signifies "computer-mediated tele-communications, or remote, automatic transmission of information" (Loeffler & Ascott 1991: 257). The same glossary defines telepresence as "the ability of individuals to sense and control events at a physically remote location as though they were present through the combination of telecommunication, computer, robotic and sensory technologies." (Ibid) Subsequently, the two terms remained in use although many artists developed their own specific or distinct definition of telepresence (Wilson 2002: 526-528). In his extensive anthology of new media art, Stephen Wilson classifies teleconferencing and videoconferencing in new media art as types of telematic art. Two of the examples he uses are Hole in Space and Telematic Dreaming.

Hole in Space was a telematic artwork in which Kit Galloway and Sherrie Rabinowitz connected two large video displays in storefronts in New York and Los Angeles in 1981 (see also Loeffler and Ascott 1991). These two public locations were connected in real-time via a satellite link that allowed passers-by to see each for some from the two coasts of the United States. Although videoconferencing technologies were available to other commercial enterprises or government organisations (Egido 1988), the way in which the two artists used the technology to connect everyday audiences in an unconventional way suggests a certain kind of artistic practice informed by maverickness as discussed in the theory chapter (chapter 2).

The other example provided by Wilson is called Telematic Dreaming by Paul Sermon. This work involved synchronous video taken from a bed in a dark room that was then projected onto another bed of the same size in another room. A video projection of the second bed was simultaneously projected onto the first bed. Visitors to either room were invited to 'lie in bed' with those lying in the bed in the opposite room[60] (Sermon 2007). Wilson describes Sermon as "an artist who has been actively exploring telematic art since the 1980s" (Wilson 2001: 519) and who has presented many different kinds of telematic installations.

Two or more real-time video signals displayed in separate or discreet spaces seem to be a shared convention of the two examples even though the definitions above give no such specification. Both works are also designed in ways that depend on the audience's ability to perform certain actions, be they somewhat specific – such as lying down in the case of Telematic Dreaming – or more open-ended – such as occupying sidewalk space in an urban environment. In this sense, both artworks are designed to depend on a user in order to work. These particularities suggest a broad outline of the aesthetic conventions of telematic artworks.

Based on these preliminary observations, Access Grid's design as a semi-immersive environment described above seemingly made it an ideal candidate as a convention for the production

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[60] See Online research documents: Sermon (1992), specifically the following URL
http://creativetechnology.salford.ac.uk/paulsermon/dream

of telematic art. The principal difference arguably lay in the emphasis on the functional aspects of synchronous digitally mediated collaboration for scientific research in the former while the latter focused on the aesthetic experiences of digitally mediated synchronous interaction.

In an interview conducted with Paul Sermon outside the Tate Modern in London, he explained some of the challenges in making a telematic artwork between two different countries:

PS[61] - "I think that firstly when you're working with two different countries together, you've got to make sure that there's a kind of a curatorial overview in both places that have to have a similar agenda: they want to do a similar thing. So they want to do the piece of work for similar reasons. So they're prepared to show it and prepared to collaborate. That's the first thing. Then, there is a whole bunch of stuff you have to deal with which is about the... The connectivity. Your time zone actually, it's the biggest problem. I've just been asked to do a piece in China next year, between China and Liverpool: between Beijing and Liverpool. And this is quite complicated because Beijing is eight hours ahead of us. So, when the gallery's open in Beijing... in the morning it's... almost, it's very late at night for us. So in actual fact the only times that we would have the possibility to do it together would be early in the morning or late at night for both. [...]"

FL[62] – "But do you get, do you get logistical support for these kinds of things?"

PS - "Um... I think everyone strives to... To reach the same result. Everyone wants to help you get... I think if everyone, if they can understand your work, understand what the issues are around your work and not see it as a kind of a... It's not only a means to connect two cities, it's a means... It's about connection... It's about experiencing a shared space. Essentially, that's what the work is about. It's not about making the kind of a connection between [two cities].

Of course there's larger politics. [...] I don't know, I think you've got to transcend that: all those issues to actually get to the real reason why you're doing it. And I think, you know, that a good curator will take those... The artist's issues and concerns on board before they start. And I certainly, myself, see it when it's not going the way it should be going."[63] (Paul Sermon, 13 July 2007)

[61] PS will henceforth refer to Paul Sermon in interview transcripts.

[62] FL will henceforth refer to the author in interview transcripts.

[63] The interview with Paul Sermon was conducted at the Tate Modern in London on the 13 July 2007.

The particularities of each work represent interesting possibilities for the artist: physical distance and proximity, cultural differences, etc. But Sermon emphasised the user's media experience as his central preoccupation – the exceptionality of a design that defined how the body engaged with the particular time and place – rather than the specific characteristics of the media form that could enable that experience or the spaces themselves. He also reinforced the importance of ensuring that users were able to perceive their agency in the work. In his example, two sets of conventions were therefore doubly made to be transparent: 1) During the interview, the artist deemphasized the importance of specific technological conventions in favour of situated technological solutions in the service of an intended user experience. It mattered little which specific media form was employed as long as it produced the desired conditions for the user's experience. 2) The artist's design extended to both spaces connected by the network. He depended to a certain extent on support personnel such as curators to control contingencies related to the technologies and spaces in which users engaged with the artwork at both ends of the connection. Proper execution of the artwork depended on both ends taking his concerns "on board". This example stressed the centrality of organisational support to provide the artist with the necessary resources to achieve the desired experience. Sermon needed curators and compliant organisations at both ends of the event to ensure the successful execution of his design.

The design of an art installation employing conventions of telematic art arguably depends on the mediation of distance. This distance could be a physical distance of a few meters or of many kilometres mediated by an ICT. The artist does not simply attempt to make the properties of distance between two connected spaces in a telematic artwork transparent. Rather, while designing such an artwork, the artist engages in a complex process of mediating the different properties of this distance: part of the experience of using Telematic Dreaming is that it is "like being in a bed with a perfect stranger" and knowing that this stranger is in an entirely different space. ICTs such as Access Grid allow telematic artists to design events where users can collaborate or meet 'face to face' without being in the same room. But nor should the ICT make the distance in the process of collaborating or meeting 'face to face' become altogether transparent.

These distant connections often resulted in significant time differences as in the example of the event between China and the United Kingdom elaborated by Paul Sermon: "So in actual fact the only times that we would have the possibility to do it together would be early in the morning or late at night for both." (Paul Sermon, 13 July 2007). The difference in time zones could make it difficult in some cases to coordinate events (for example, an 09:00 meeting in London would likely be far too early for people in Toronto). In such communications, there-

fore, the manifestation of distance is not necessarily only experienced in space, but also in time.

Distance was not limited to time and space, it could resonate all the more within a wider organisational distance. Just as Mark et al. (2003) observed in a case study of scientific collaboration between groups using videoconferencing sessions, a 'space between' nodes from an organisational standpoint, such as different managerial styles, could make collaboration between groups difficult. In the case of the Paul Sermon's example, the social and cultural distances between users in the United Kingdom and in China were desirable, but these came at a price of temporal distance and organisational distance that had to be minimised. To make these other distances transparent, he needed the support of other actors such as curators. Distances, therefore, could at once represent enabling and constraining conventions for a telematic artwork.

In this study, telematic art is understood as a set of conventions that in some cases adapts standards of videoconferencing for the production of artworks. The two examples provided above establish that part of the work of creating these artworks involves conventions of ICT design and use as networks connecting multiple points in real-time. As a media form, Access Grid represented a potential convention for artists to produce telematic artworks. It could also provide those who hoped to design and use the academic high bandwidth network space with a way to reproduce existing art world conventions of telepresence through videoconferencing. In this sense, the Access Grid medium represented a bridge between artists' interests and those who supported an increase in artistic activity on the high bandwidth academic network. But Access Grid and high bandwidth were by no means the only standards that could be appropriated by artists for making telematic works or for communicating and collaborating.

This outline of the conventions of telematics identifies points of contention that require an in-depth investigation of how they are applied to the design and use of AG specifically. I now turn to an historical account of its selection by the MARCEL network before examining specific instances of appropriation of AG nodes by artists for the production of artworks.

4.3.2 High Bandwidth and the birth of the MARCEL Network

The Souillac Charter for Art and Industry, presented to an International Telecommunication Union Conference in 1997, was arguably the key event leading to the birth of the MARCEL Network (see also chapters 5 and 6). The charter proclaimed the arrival of a new "communication space" which it loosely designated as "the network". Although Access Grid was not identified as a useful platform at the time, access to this online space through digital information networks was identified as one of the main priorities for artists. The charter declared that commercial industry could most contribute to artistic development was by:

"[...] developing a partnership with institutions, governments and international organiza-
tions to build the interactive network for artistic and educational exchange and by reinforc-
ing supportive relationships whereby industry provides artists and arts organizations with
technical support, maintenance, resources, networks [...]" (Foresta and Barton 1998: 228)

The charter signatories argued that efficient and dependable video and audio distribution networks with little lag were rare and expensive for artists at the time. The experiments developed by the likes of Argonne's Futures Lab were not available to most practicing artists or academic arts departments. By the time of the second Souillac conference in 1998, participating artists and arts organisations had "expressed the need for higher bandwidth possibilities and for a permanent pipeline for artistic, educational and cultural experimentation" (Foresta et al. 1999).

Based on similar arguments put forth in the Souillac Charter for Art and Industry, the report produced for the second Souillac meeting (Foresta et al. 1999) suggested that artists and arts organizations would be well-placed to experiment with and test the limits of the emerging high bandwidth networks being developed by large telecommunications firms.

The Souillac efforts to gain commercial support in the transformation of a permanent high bandwidth network into an art world convention did not lead to any immediate success. But the points of action formulated in the Souillac II Conference, including the need for such a network for artistic experimentation, would become the blueprints for what would later be known as the MARCEL Network. As will be further developed in chapter 5, it also reaffirmed the arguments formulated by Don Foresta and others concerning the artist's role as a key contributor to the development of this new communication space. Part of this contribution, as Souillac II stated, depended on online collaboration between artists and between artists and support personnel and organisations from the private and public sector (see chapter 6).

4.3.3 Discovery and use of Access Grid by the MARCEL Network

After the Souillac meetings, attention progressively shifted away from gaining access to commercial high bandwidth networks and instead began to focus on the potential artistic application of high bandwidth academic networks. As part of a research fellowship at Wimbledon School of Art in London, United Kingdom (see section 5.7.3), Don Foresta and his team were able to establish a high speed connection over the academic network with Tim Jackson and his team, Synth/ops Research Group, located at Ryerson University in Toronto, Canada in November and December of 2001. It is unclear which of the two introduced Access Grid to the other. When asked, both Don Foresta and Tim Jackson presented its introduction as a fortuitous discovery:

"[...] I was in the Roger's Centre [at Ryerson University], you know, looking around at all these empty rooms, and saying: "Well this was a project 'Orion', this was this, and this, and whatever." And so I said: 'Well you know I have this research group and, uh, just formed this relationship with this researcher in Paris, Don Foresta, this group with MAR-CEL, and I've been invited to use this Access Grid technology. What if we move that technology in here and, sort of like in a 'Beyond the Thunder Dome'", you know, manner..." I appropriated all of these abandoned equipment, you know, that was abandoned at this point anyway. And so that's how we began, it's just reassembling all this equipment in this space and furniture and everything and, uh, and my futon... and the space included a kitchen in the centre. So it was a social environment which was also simultaneously an Access Grid facility." (Tim Jackson, 26 September 2007)[64]

Access Grid represented a potentially useful convention for these artists, particularly those making telematic artworks, because it could deliver high quality, multiple video and audio streams over IP Multicast to many different nodes. This, they felt, was particularly useful for artists who wanted to collaborate online with the least amount of lag (the time it takes to compress, upload, download, and decompress digital signals online between two or more points). An example given to me by some of MARCEL's members was of two musicians, one in Europe, the other in the United States, trying to play instruments together online. In such cases, even the slightest (in the microseconds) delay could make playing together next to impossible without continually shifting tempos to accommodate the lag. By using academic high bandwidth networks, MARCEL members set out to develop these networks into art world conventions. They hoped it would be a convention that enabled artists to design new ways of collaborating and interacting. Their use of academic high bandwidth networks such as JANET, to a certain extent, set MARCEL members apart from artists working with other digital information media forms like the World Wide Web, both literally and figuratively. Not only were most of these works not accessible to artists who could not access these networks but this type of experimentation was expressed by its members as significant because of the 'cutting edge' technology involved.

It is significant, however, to see that most of the major events over the high bandwidth network during this period did not use Access Grid. Instead, different mixes of tools such as Evo-logical's Coolstream and Net Meeting videoconferencing software were popular. Access Grid was used for one major performance called Impossible Sky in which Ryerson University, the Wimbledon School of Art and the University of Maine in the United States, collaborated to stream a composite live image of the three skies in each location:

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[64] The second interview with Tim Jackson was conducted at a residence in South London on the 26 September 2007.

"An indeterminate number of cameras point towards the sky. The collective presence of all these images are joined together into an additive composite. While it isn't possible to distinguish individual characteristics from each location the composite becomes a hybrid of all sky— the impossible sky."[65]

It should be noted, however, that even in this case, Access Grid is listed on the project summary as only one of the possible platforms to create the artwork. At the time of the project's implementation, videoconferencing applications were not widely available and the connections proved difficult to maintain. These problems, some argued, were linked to the fact that there was not a permanent Access Grid node in each location:

"Technical problems dominated the first morning but also permitted us to explain the problems with a non-permanent situation and to underline the importance of school-wide installations permitting faculty and students to connect with a minimum knowledge of the technology and with the same ease as the telephone. Everyone agreed on the importance of the transparency of the technical side of the network and the central role of content."[66]

Here transparency of the media form was explicitly articulated by the artist as a way of enabling its users to focus on content rather than the 'technical side'. A permanent installation was presented as the best way to support such a transparency. As in the Sermon example (above), they hoped that the organisation where the node was designed could bring stability to the connection thereby enabling the artists to focus on designing the intended experience for users.

Much of the artists' work in Wimbledon and in Toronto with Access Grid took place outside official events. I met with a former student and employee of the Wimbledon School of Art who worked extensively as an artist with Access Grid and the MARCEL Network:

"[...] we started to do this kind of... Experiment on the Access Grid and while we were doing it we were just building things with the camera and overlaying sound and overlaying with text and things like that. It was quite interesting because, working while we were doing it, it was all live. [...] So we were using live things. So we had to... You know we had a book with a lot of images and we kind of just put the book and it was streaming live. And then... [one student] was putting some sound in there and then... Then [another student] found software where he could just write things and we could move it. It was like

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[65] See Online research documents: Jackson et al. (2001-2004), specifically the following URL
http://www.rcc.ryerson.ca:16080/synthops/sky/index.htm

[66] See annex 1: MARCEL Archives 00001. 'WSA Broadband Workshop – May 24-25' written by Don Foresta, 31 May 2004.

a graphic animation of text but within a bar... We overlaid it. It was experimenting, things like that."[67] (Graziano Milano, 8 March 2007)

Graziano suggested that his engagement with Access Grid, and those of others he collaborated with, took the form of experimentation similar to that presented in section 4.2.5. In this case, the characteristics of experimentation work took the form of collaborations between distant participants, using the flexibility afforded by the platform to integrate additional software in order to add text. The basic connection protocols and standards of the media form remained transparent. Experimentation involved discovering and testing the possibilities afforded by Access Grid as a convention. However, further details about the situation suggested that the experimentation was also taking place within an academic environment with specific properties similar to, and yet distinct from, those detailed in computer science environments:

"[...] I was working at Wimbledon, [the two other students] were doing a placement. And we used to... Because we were in the same space, we just started talking about things like that. So when we had a little spare time, so we'd start doing these things. Tim was, you know, on the other end was in Toronto so we started playing around. Because we just had the space. We had the computers [...] we had the connection we were... Because the research centre was in a house, basically separate from the school. So we were very quite isolated. We had keys, everything. You know there was cameras and just used it. We just had it perfect because we didn't need to ask for any permission. It was... everything's there for us. So we started doing that. And then we did a few of that and started recording it. In a sense it's kind of ... It was just playing around with it but, you know, it just shows the stuff we were doing... It was just... We didn't have any ending where we'd say: 'Oh, we've got to do this.' It was just really playing. But you know, I could understand the potential, how this was going to happen more... You know, more and more and more in the future. I think that this was 2001. So we were really at the beginning of that stuff. [...]"(Graziano Milano, 8 March 2007)

"Just having the space" and someone "at the other end" enabled these artists to engage in a process of experimentation with the Access Grid platform. The space and its technical resources were provided by the Universities where they were students.

These early accounts of Access Grid's appropriation by members of the MARCEL network suggested that they were engaged in a process of mediation which this research designates as experimentation. The following section focuses on a number of events and telematic artworks

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[67] The interview with Graziano Milano was conducted in a café in South London on the 8 March 2007.

designed using Access Grid in order to gain a better understanding of the specificities of such a process.

4.4 Access Grid Encounters

This section delves further into the specific media instances of Access Grid's design and use as a convention. It combines the results of participant observation, interviews and document analysis to portray spatial arrangements and practices relating to Access Grid nodes in order to clarify how AG is mediated as a convention, in general, and specifically as a tool for artistic production. The analysis is built around four encounters with Access Grid Nodes. The first consists of a description of my first encounter with an Access Grid node (section 4.4.1) followed by three encounters with Access Grid nodes where telematic works had been produced, two of which were produced with the help of the MARCEL network (sections 4.4.3 and 4.4.4).

I was not able directly to observe the production of an Access Grid artistic event initiated by the MARCEL Network. This in itself is significant. Although there was a considerable number of documented events between 2002 and 2005 [68], by the early stages of the field research in 2005 production of such events among members encountered began to stall. This signalled a change in the dynamics within the network and provided the opportunity to examine to what extent commitment to the specific ICT, Access Grid, as a media form was classified as a convention for artistic production (see also chapter 5).

4.4.1 First encounter: A reflexive account of first using AG at the Wimbledon School of Art

Access Grid was not only used by the members of MARCEL for the production of artworks. My first encounter with Access Grid took place on 28 October 2005 at the Wimbledon School of Art. I had received an email from Don Foresta, who was in Paris at the time, inviting me to sit in on a meeting with some of the MARCEL Network's members. I arrived at the School in the early evening. The Wimbledon School of Art's campus is located in the residential suburb of Wimbledon in London.

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[68] See Online research documents: Jackson et al. (2001-2004) and Blais and Ippolito (2005)

There I met with Grzesiek Sedek, a contributor to the MARCEL Network since 2003 and an employee of the School. The two of us sat down at his PIG which, at the time, was set up in a computer lab next to the silkscreening and lithography rooms. His station was set up next to a pile of discarded computer screens and other refurbished hardware, a large A1 format printer next to his desk. We were alone in the room with the only remaining working Access Grid connection in the Wimbledon School of Art.

It was mid-day in North America at the time, which explained why we were meeting in the early evening. The meeting seemed to be informal. Set up time took about 45 minutes as windows flickered on and off on Grzesiek's screen. At this point, participants were checking the audio signals to see if any feedback was being picked up from any of the nodes. Grzesiek explained to me that it was a common occurrence for equipment which picked up sound from entire rooms to cause feedback if they did not have an 'echo canceller'. I later discovered that this was why sound equipment for large Access Grid nodes could be so expensive and why many events that made use of Access Grid scheduled setup times as part of their timetable. In this case, we were making do with a small microphone that we kept at a safe distance from the speakers. Individuals would each turn off their sound and give a "thumbs up" to the others to show that they were not getting feedback. Once all of this was settled, we introduced ourselves to the other participants and a brief discussion of the projects each individual was working on ensued. It was during this meeting that I met some of the MARCEL members for the first time and in some cases, the only time. Having never before used a videoconferencing application, I felt quite excited to be able to witness this event. As time passed, I began to ignore the occasional lag in video signals and focused on the conversation.

Speaking to Gzresiek afterwards, I learned that he had personally experimented extensively with the Access Grid platform. Specifically, he had created what he called 'patches' or 'tools' for Access Grid using an application known as Pure Data. Pure Data is a "real-time graphical programming environment for audio, video, and graphical processing"[69] and is available to download for free on the World Wide Web. When used with Access Grid, these Pure Data tools allowed a user to apply video effects to a videoconferencing session and modify their settings in real-time.

In a later interview with him, Grzesiek explained that he was not the only one who worked with Pure Data patches for Access Grid and that this was key to being able to make works online with the two applications:

"[...] There are all kinds of patches which allow you to connect online with different people and do that stuff, you know. That's the main thing, you know, really if you want that

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[69] See Online research documents: Zmoelnig (2008)

kind of collaboration, you have to have other people on the same level, you know, who work on the same tools. That's why I've got them available for download.."[70] (Grzesiek Sedek 6 November 2006)

Grzesiek made these patches available to anyone else online who would like to use them. In part, this ensured the possibility of having a number of "people on the same level" to collaborate with. He also designed certain interfaces using Access Grid and Pure Data patches in such a way that a user simply had to connect via Access Grid without the patches installed.

"[...] people [need to] actually have the same compatible setup, you know. In a way, Access Grid is... In a way, Access Grid gives you this kind of interface where you can just stream the video in both ways, and you can track the Pure Data into it and it makes it work so you can get the video from them. [...] it's the simplest way of interfacing with them, you know, because people that have their camera, they can interact through the video with your piece and then get the results from that. It's the very easiest way because they don't have to have a complicated setup of Pure Data tools or whatever." (Grzesiek Sedek 6 November 2006)

Pure Data enabled Grzesiek to design and use Access Grid as an art world convention. Its flexible design made it possible to use patches developed with other applications thereby making it a more artistic media form for him.

I procured a list from Grzesiek of what was needed to set up my own PIG. Although the computer at my disposal at the LSE was multicast capable, it was necessary to ask the Information Technologies (IT) support staff at the university to enable the connection as I did not have the required security clearance to do so myself. The open source Access Grid Toolkit platform was acquired from the main Access Grid website[71] and I began exploring a variety of different Access Grid virtual venues from my desktop. When double clicking on the AG icon that appeared on my screen's desktop, a 'Venue Client'[72] would appear that allowed me to connect to Access Grid Virtual Venues. The MARCEL virtual venue[73], whose address was given to me by Grzesiek, was essentially empty as long as no events were taking place. The 'text field' indicated '−Entered venue MARCEL' followed by the date and time of the session, followed by

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[70] The interview with Grzesiek Sedek was conducted at the Wimbledon School of Art in south London on the 6 November 2006.

[71] See Online research documents: Access Grid (2007)

[72] See annex 2 – image 2.3

[73] See Online research documents: MARCEL Network (2007), https://vv3.mcs.anl.gov:8000/Venues/000001025ee344ddo08cooddoooa005a159

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'MARCEL is a permanent broadband interactive network and web site dedicated to artistic, educational and cultural experimentation, exchange between art and science and collaboration between art and industry.' (MARCEL 2007). In the 'exits panel', MARCEL was located under 'Not for Profit Organizations' next to other 'Virtual lobbies' containing multiple virtual venues.

Though later versions of the Access Grid venue clients such as the one I was using were designed to represent virtual venues[74], finding someone to talk to spontaneously on the Access Grid platform was not easy. Virtual venues often had strange names – for example, the virtual venues at the AGSC were named after pubs such as the "Marble Beer House virtual venue". The Access Grid platform could seem desolate unless a specific time and venue was arranged in advance with another node. The exception seemed to be the Argonne National Laboratory virtual venue[75] that continuously displayed video streams of speakers, empty rooms and, somewhat ominously, what looked like airplane landing strips. I also felt I had to be careful since I ran the risk of accidentally 'walking in' on an unprotected event where outside visitors were not welcome. (Imagine walking in uninvited on an ongoing 'real' meeting in an actual boardroom.)

I quickly learned that most of these events were coordinated in advance by email or by phone. Websites like the Access Grid main site[76] and others like the AGSC site[77] hosted at the University of Manchester were also useful for coordinating these events, providing access to mailing lists on Access Grid related subjects, finding contact details to arrange quality assurance tests and simply getting a general idea of the other nodes that were out there. As will be addressed in chapter 5, the MARCEL Network's website was partly designed with this kind of support in mind for artists. Access Grid's dependency on other media forms to coordinate activities reinforced the perception that the platform was not an independent or discreet application but rather functioned as a single part of a larger network of standards and functions.

Looking at the images of some nodes posted on Access Grid's main website, it was clear that the physical layout of most Access Grid nodes reproduced a specific set of spatial characteristics of another offline space: those of the conference room. Anyone who has spent enough time attending conferences would likely be familiar with this type space: the white walls, greyish carpets, the long tables, the chairs neatly distributed along their sides, the oversized paper note pad, blackboard, or more recently the digital projector or large digital screens. In some

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[74] See annex 2 – image 2.3 in the 'Contents panel' and 'Exits panel'

[75] See https://vv3.mcs.anl.gov:8000/Venues/default

[76] See Online research documents: Access Grid (2007)

[77] See Online research documents: AGSC (2008)

cases these rooms are small, accommodating only a handful of participants, in other cases they are larger, with theatre-style chair arrangements and a podium. The nodes reproduced some of these characteristics into an online network of conference rooms in order to enable research communities to collaborate using grid computing (Childers et al. 2000). The offline arrangement of an Access Grid node as suggested on its website was dependent on the model of standardised conference rooms. Its size and layout were dependent on the scale of the conferences it is used for (Refka 2003 B). But it is also important to stress that these standards were not necessarily consistently applied throughout. Although there were consistencies, conference room standards of the AG nodes demonstrated an enormous amount of variety. Just as my PIG nestled in a quiet office at the LSE differed from the PIG Grzesiek built at the Wimbledon School of Art next to a pile of discarded computer hardware in a printing room, each space had its distinctive features. The scales of the rooms in which the nodes were built varied as well. Although the number of tiled screens remained somewhat consistently in threes, the visualisation was provided in some cases using projectors as in the Access Grid diagram (see annex 2.1 and 2.2) or in some cases using large flat screens.

4.4.2 Second encounter: Access Grid rooms at the University of Manchester

On the 5th of March 2007, I visited the Access Grid Support Centre (AGSC) in Manchester where representatives had collaborated with members of the MARCEL Network and, as will be discussed in the following example, actively promoted Access Grid for artistic use among other artists. I hoped to form a better idea of what advantages Access Grid represented in general and to artists, in particular.

The AGSC was housed at Manchester Computing, located within one of the large concrete buildings on the campus of the University of Manchester. Speaking with Mike Daw of the Computing Department, he described how Access Grid had certain properties that made it more attractive to the academic research community over other applications that enabled videoconferencing such as Skype:

"The big benefit about Access Grid is that it's extensible. You can add to it. You can do fancy things with it so it's great for the research community. Someone gave me a great analogy that I'd never heard before, actually: it's like the difference between having a toaster and a grill. You know, with a toaster, you can make toast. It's pretty easy to do because you just flick it down, it does it. It does it pretty quickly, and you've got toast. With a grill, you can also make toast. It takes a little bit longer and you have to turn it over half way through... But you can also do fish, and you can do sausages, and you can do lots of other things with it as well. So, I just thought what a great analogy that is. So

that's the difference between Access Grid and something like Skype or Access grid and videoconferencing."[78] (Mike Daw, 5 March 2007)

The contrast between the toaster and the grill presented here is quite similar to the concept of the black box as developed by Trevor Pinch (see Schaffer 1989: 70). The toaster renders most of its standards of operation transparent whereas the grill's uses can be extended to include many other kinds of operations. This extensibility was why Access Grid offered a wider variety of technical choices in how to set up both online and offline aspects of networked collaborative environments. Control over these choices allowed the members of Manchester Computing to take on the role of producer (Suchman 1999) of the ICT and mediated by the ICT; fine tuning the connection, adding functionalities or modifying the number of audio or video signals.

A good illustration of this flexibility as a means of experimentation was a small experimental node at the entrance of one of the open plan offices in the Computing Department of Manchester University. Partially hidden from the rest of the office by a curtain, it seemed to be a makeshift installation with chesterfields, two cameras, a personal computer on the ground and four digital flat-screens suspended to the wall[79]. The entire setup was crisscrossed by a dozen black cables. Mike Daw explained to me that this installation was used to experiment with technologies that enabled users to select 'virtual' backgrounds for the node.

He acknowledged that this technical flexibility was difficult to access for those who were unfamiliar with the expert knowledge needed to modify Access Grid's settings. This knowledge was most often the preserve of computer engineers who mediated this flexibility for others.

"It's available to people who know what they're doing. I mean, that's the whole point. [...] what Skype are doing and what videoconferencing provides is the whole emphasis is on making things easy. If you want to make things easy, you tie things down. You don't give people options. You just say: "press here and it'll work." You know, and that's not flexible. But it does work. So that's the difference. People do criticise Access Grid for not being as usable as it should be. And they're right. It could be better. But the reason why is because it's so flexible. So that's the key thing." (Mike Daw, 5 March 2007)

Flexibility and transparency were almost presented as inversely proportional: by minimising transparency, Access Grid remained more technically flexible. But expert knowledge was

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[78] The interview with Mike Daw of Manchester Computing was conducted at the University of Manchester on the 5 March 2007.

[79] See annex 2 – image 2.4

therefore needed to tap into this flexibility. The report published by the University of Florida describing the SC Global 2001 event, Dancing Without Boundaries, provided a similar description of how collaboration between artists and engineers was structured within the university environment, explicitly referring to transparency:

"[...] we found that the AG and related technologies became almost transparent, and that the artists were able to articulate their needs to the engineers, and the engineers were able to reciprocate with descriptions of what the system could and could not do. Because of their familiarity of video cameras and projections, microphones, headphones and telephones, the artists were able to concentrate on making the actual content of the piece, while engineers monitored the system to maintain the best possible quality of service." (Oliverio et al. 2001: 3)

In the pictures of Dancing Beyond Boundaries taken from the Access Grid node at the University of Manchester[80] the actual physical arrangement of the room still appeared to reproduce the standards of the conference room.

Based on the successes and technical difficulties of Dancing Beyond Boundaries, in 2002 Manchester Computing embarked on a series of experimentations in collaboration with a local artist working in new media in order to develop an artistic performance using Access Grid called Navigating Gravity[81]. Although the project was not implemented by members of the MARCEL network, it constituted the earliest documented artistic event using Access Grid initiated in the United Kingdom.

The project included creative works coordinated by a performance artist, Kelli Dipple, who organised a series of collaborations between the University of Florida Digital Worlds Institute and the University of Manchester. Her interest in the project concerned real-time networked performances with respect to dance. Having worked extensively in Australia and the United Kingdom, she was invited by the University of Manchester Computing Department to work with them as part of her own research project funded by the Australia Council for the Arts. The director of the department was familiar with her previous work at an arts organisation in Sheffield and had previously invited her to speak as a professional artist at a conference. These earlier encounters enabled her to approach the Computing Department as an individual with expert knowledge of a set of art world conventions who might be trusted to take on the role of artist. But, unlike Grzesiek's design of Pure Data patches for Access Grid, Kelli was not invited to technically modify aspects of the Access Grid platform. The collaboration was rather

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[80] See Online research documents: Brooke (2001).

[81] See Online research documents: Dipple (2002).

intended to focus on her use of Access Grid as a platform for the creation of multi-sited online dance performances similar to those of Dancing Without Boundaries. Even control over the properties of the offline space was limited. As the artist notes:

"the grid itself (in Manchester) as a viewing experience is: three projectors side by side along one wall it's a low ceilinged conference room with carpet on the floor there is one background image repeated three times across the three screens prerecorded video and camera views are in windows 2000 type window frames and dragged onto the screens by the node operator

[...]

in general closeup to mid shot works better / as the rooms we are to perform in are actually computer labs and regular conference rooms they are non performative spaces.. this is a major issue. I have developed most of the content on a chair... and around the face... because longer shots get too much background clutter in frame... also - because there are multiple windows telling the story, too much information in individual frames is too much for an audience to take in.

[...]

[C]ameras in the vid con room at [M]anchester are attached to the wall, not free standing / so - I found the best place to be to avoid clutter is the very centre of the room (find a chair without arms if you can - its easier) its just a matter of zooming them in on you... (I will talk this through with you both on the first link session. there really are not too many choices about where you can be in that room... I would like to move the tables away from the centre of the room (as they are setup for traditional conference/meeting)"[82]

The artist was a visitor, not a fixed presence in the department or the Access Grid node. Although she exercised power in designing the use of certain resources and tasks, her interventions could not be so invasive that they permanently changed the properties of the Access Grid standards as a media form or of the media objects available at Manchester Computing. The time available to experiment directly with the technology by occupying the space was also limited. This put pressure on the logistic side of organising the performance:

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[82] The artist's field diaries covered the period from 11 April 2002 to 8 September 2002 and were posted online as part of her research project into the potential use of Access Grid for artistic performances. See Online research documents: (Dipple 2002).

"Attempting to get rehearsal and presentation time simultaneously in more than one venue / space is always problematic. Dealing with a range of performers and crew in different time zones is also always tricky. It is not difficult to confirm interest from different venues and people, however coordinating their availability simultaneously is. Even if venues are not in different time zones, they may have different opening hours."[83]

The artist faced challenges in mediating what Mark et al. (2003) call the 'space between' organisations. Her application of temporal conventions of rehearsal and presentation times in dance and theatre were strained by the complexities of a synchronous distributed event. The temporal and organisational differences between the different nodes involved in the process of experimentation became apparent to the artist. Not only did she design the objects and instances in the node where she was located, she chose to do the same for the other participating nodes. This telematic approach was similar to the one described by Paul Sermon in section 4.3.1. In this case, however, the artist could not count on curators or other familiar art world actors for support.

Once given access to the node, the artist was invited to sit in on some of its activities. But her engagement with the node was one of an outsider. Her dissatisfaction with what she perceived to be the conventions of Access Grid's use were partly mediated by her own disconnect with computer scientists' standards in designing and using it:

"Some [of my ideas] were blatantly obvious, like, that the very first time I went into the Access Grid I sat in the corner and very nervously, with a bunch of scientists talking about god knows what, I have no idea, it all went straight over my head. And there were three or four university sites in discussion and straight away I just kind of thought: "I can't tell who's talking!" There was no "cinema" to it, there was no cameraman. You know, you watch a film and it's showing you well before the time, it's pre-empting you. There was no narrative. It was all totally flat. And there was some sort of technician who was just sitting there and seemed to be randomly resizing images without really any clear understanding of the power of cinematic conventions to aid communication. And equally to hinder communication. To get the instance where all of a sudden the technicians are making the boxes move all over the place."[84] (Kelli Dipple, 11 May 2007)

Here, the artist suggested that something along the lines of remediation (see section 2.6.3) of film took place. But her critique focussed on the use of the online media objects, such as the placement of windows. This, in turn, helped her to determine and experiment with what she

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[83] See Online research documents: Dipple (2002)

[84] The interview with Kelli Dipple was conducted in the 11 May 2007 at the cafeteria of Tate Britain in London.

could and could not do; to see whether her own objectives to produce certain conventions, from film, dance, telematics or otherwise, out of their standards could be achieved. The work became a continuous negotiation between the artist and the members of the department in which the artist expressed her needs to the department's representatives. Despite these constraints, the artist's work managed to create perceptible exceptions for the engineers at Manchester University:

> "But some of the stuff that, you know, that [the artist] did, for example, in [the performance], well, you know, she changed the background of the Access Grid so that it wasn't black, and that it was changing. So you had different pictures as a sort of background. And she'd move the windows around so that they formed interesting patterns. And there were different things going on there with different sizes and so on. And she didn't do any manipulation really – there wasn't any coding involved – but there was playing around with the Access grid environment. And you just couldn't do that with anything else.

> [...]it's the way [artists] look at it completely differently. [...] so she came into the Access Grid node and she looked at it and she said: "Right, I want to get rid of these fluorescent lights. We need some better lighting. You know, more ambient lighting." You know lots of soft lighting lamps and have those pointing down and spot lights and something like that. And she said: "I want to get rid of the desks." You know, things like this. The whole environment was changing. And I'd never even thought about it before. But you know the way that we have the meetings, people line up the windows of an Access Grid node. And it's all a straight line. She said: "I want to get rid of that. I want things overlapping." And it was really disruptive. It was really shaking things up." (Mike Daw, 5 March 2007)

Just as the artist was "shaking things up", the intrusion seemed to have had its uses for the Computing Department. By collaborating with an artist, Manchester Computing as an organisation, tapped into the knowledge that stemmed from her expertise leading them to question established standards. Inviting in an artist as an expert in order to identify and question transparent standards also played into the discourse of the maverickness of the artist (see chapter 4 for in-depth analysis) – an artist is invited to work with an ICT to produce something that is unconventional.

Much like its predecessor, Dancing Without Boundaries, the artist's experimentation with Access Grid for Navigating Gravity depended on engineers, not only for access to the ICT standards that remained to a large extent transparent, but also in order to modify the space itself. Although Manchester Computing's design for its Access Grid node was not explicitly intended for artists, its articulation as an experimental media form opened up the possibility of collaborating with an artist. The department temporarily ceded some of its control over the

Access Grid node in order to better understand its own engagement with Access Grid as a media form and set of media objects. In the case of the artist, her access to the node was limited and temporary. Flexibility, in this sense, was carefully mediated at the level of conventions for media objects and for the space – the arrangement of online windows, the location of chairs in the room, the immobility of the projectors – and at the level of media instances – the time allotted for rehearsal and for the actual event.

There were no apparent remaining traces of the artist's work in the configuration of Manchester's Access Grid node when I visited the Computing Department on 5 March 2007. The main Access Grid node had been restored to its past status as an Access Grid conference room. The only traces left of the event were the documents collected and posted online by the artist on her website.

But the artist's work was not constrained to simply using the Access Grid node within the limits set by the academic departments. By integrating her experimentation with Access Grid into a wider research project, Kelli could integrate her experiences into an exploration of other technological options for her work:

"In conjunction with this research and development into high-end multicast technologies, available via university networks, I travelled to interview and discuss the use of a broad range of other communication technologies that were being used by smaller arts organisations. There was nowhere outside of university computer science departments that had videoconferencing facilities so these discussions revolved largely around the use of the World Wide Web, chat interfaces and streaming media. I was looking for the crossover points between high-end technology used in privileged spaces like universities and the low-end technology being used in the market place and public domains."[85]

Kelli's career as an artist did not end at the walls of the university and her ability as a user to explore different new media in different social worlds allowed her to discover many potential conventions.

4.4.3 Third encounter: Streaming tales

Graziano Milano was one of the individuals who had had the chance to work with Access Grid at the Wimbledon School of Art when Don Foresta had begun putting together an Access Grid node there in 2001-2002. I met him in London a few years later to discuss his experience using the platform. Having moved on to other projects after Wimbledon, this artist had participated in the production of another Access Grid event while working at THEpUBLIC, a

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[85] See Online research documents: Dipple (2007)

new non-profit community arts centre being built in West-Bromwich[86], in collaboration with the University of Maine in the United States. He explained to me the challenges he faced when attempting to get THEpUBLIC connected to United Kingdom's publicly funded high bandwidth network (JANET) in order to set up an Access Grid node. Although the building was connected to a high speed network, he found that much of its bandwidth was inaccessible because of firewalls. Additionally, those who used the connection at the time made limited use of it:

GM[87] - "But it was mainly used as a way for people to search Internet... you know, and sending emails to each other. It was not really potentially used at all. So what I managed to do is I complained to the people [who maintained the network]. I said: 'Can you just give me my routs to connect to [JANET] and then I can connect to the network.'" (Graziano Milano, 8 March 2007)

When I asked him if the cost of setting up the connection had been prohibitive, he replied:

GM – "No, it was free. I negotiated it. And what I managed to do is, I found someone to buy a computer, some PCs which was dedicated to MARCEL. So we put Access Grid in there. Then I managed to get some cameras, not... Within two years... Slowly, I got the computer, I got the cameras, I got the surround sound speakers, I got the screen, I managed to get microfilms, things like that... So I had the kind of small setup which I could move around in the space. And because of that we did some Access Grid stuff with Don [Foresta]. " (Graziano Milano, 8 March 2007)

Once the slow process of constructing the Access Grid node for THEpUBLIC was complete, it allowed Graziano to begin collaborating with other artists. In 2005, the two artists he had previously met in Wimbledon, Alexandre Berthier and Karl-Otto von Oertzen, were now attempting to create an art work called Streaming Tales as part of an academic project at the University of Maine in the United States. They envisaged an event that would invite participants, particularly members of local displaced minority groups, to exchange personal stories in an intimate setting over the Access Grid platform. The three of them decided to design a physical space for the Access Grid node that they felt would be more conducive to this kind of audience participation:

GM – "And I don't know how it came up but, we started thinking about the idea to put people to talk to each other. So, you know when they were telling their stories, they can reply to it – so have a conversation instead of just being an audience. And, that was the

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[86] THEpUBLIC, which was to open in 2005, has since gone into appointed administration (Sudjic 2006)

[87] GM will henceforth refer to Graziano Milano in interview transcripts.

first thing. And then I said: 'Ok, what... what things we can create to allow that kind of conversation to become a more natural, you know?...' And then it was natural, we just said, you know: 'What kind of social things we do, you know, when we meet new people?' 'Oh, well we go for a meal.' 'Or we meet in a pub. Or we go for a drink. Or we...' We thought about the social things we do in everyday life. And then we said; 'Ok, let's do a thing with that. Let's do a thing where we have some in both places. So we can, you know, have half in one way and half in another way. Streaming with two cameras on each side. We can make dinners. That... That was the initial idea. So we started trying in different ways of, you know, with the cameras. At the beginning it was really kind of a... Thinking about an installation. A mass installation. So cameras there, over there, you know, the compu... So what we were thinking about... More about the visual element of it than about actually what we were doing which was the conversation, the tale." (Graziano Milano, 8 March 2007)

At this point, much like the stated intent of Access Grid's designers who were looking for a way to provide a semi-immersive scientific collaboration tool, the artists designed an installation that tapped into the norms, in this case relating to the everyday activity of eating at a dinner table, in order to enable social interaction for a group of connected users. They designed a space for a conversation at the dinner table for geographically distant or diasporic communities.

GM – "Then we started, you know, thinking about the meal: 'Ok, I'll put the table...' And when we were actually doing this preparation with [the artists], we just realised: 'Actually, we don't need all these cameras, or... We just need... You know, we need a half-table. Very simple, you know. Keep it simple... Keep it simple as really being in a meal.'"(Graziano Milano, 8 March 2007)

The initial layout of the installation consisted of symmetrical dining rooms in both spaces in order to allow the participants to feel as though they were sitting together in the same location, talking to each other over a meal. The artists hoped that by creating an environment that physically reproduced the familiar social conventions of the dinner table, individuals partaking in the event would be more comfortable in engaging others in conversation. With this in mind, the artists searched for spaces that would allow them to avoid the physical constraints described in Navigating Gravity:

"So for us, Access Grid's problem, at some point the people who use it – mostly in universities – [they] are in a... mindset of conferences. It remains about conferencing. So who

says conferences, says rooms with tables, with that light, and we were trying to push to create a "black box".[88] *(Alexandre Berthier, 31 February 2008)*

The artists working at the University of Maine tried to replicate what they considered to be the conventions of a flexible space for experimentation known as a 'black box'. Their use of the term stemmed from the art world of theatre to describe a room with no visible décor that could be physically stripped bare. An artist could then choose where to place lighting, sound, stage or any other physical aspects within the space. In this case, Pinch's 'black box' analogy was inverted. Rather than describing something that covered up the technology from the outside like a toaster, for these artists the black box was a space whose physical properties could be infinitely modified from the inside.

"The idea behind the project evolved a lot because the initial idea was a lot more... a lot more theatrical. In fact, there was a little theatre in the middle of the university – a little round theatre – that [we] tried to use. In the end, we did a lot of tests. These were real installation tests where everything was in the dark. [...] That was a very interesting phase because we had the theatre for ourselves. We had pulled in an enormous internet cable because the spot didn't have an Internet connection.

[...] But in fact, doing that kind of experimenting we came to the realisation that it was... For the type of project that we wanted to setup, we really had to work with... with people from different communities. It was too theatrical. It was... It would have been too intimidating for them. So we had already asked ourselves that kind of question. We thought: 'This isn't the type of space in which we should be doing this.' In the end, we didn't do it in that theatre but in a little room in the department that was more of an office space."
(Alexandre Berthier, 31 February 2008)

Bringing Access Grid into a theatre at the University of Maine afforded the artists with the opportunity to work in what they considered to be an ideal space for experimenting with the physical properties of the node. However, as the technical aspects of the project became clearer, so did the importance of situating the event in what they felt was a more appropriate, a more everyday, social context for the users. In the end, financial considerations and Access Grid's technical limitations made it difficult for the artists to leave the university campus in

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[88] The interview with the artist Alexandre Berthier was conducted in French in a café in Paris on the 31 February 2008. Author's translation from French to English. The term "black box" was pronounced in English by the interviewee.

Maine. Nevertheless, the balance between technical standards, artistic conventions, and everyday standards articulated as artistic conventions was in continual flux over the course of the experimentation.

Just as the engineers at Manchester University had understood Access Grid as a flexible tool for experimentation, the artists working on Streaming Tales sought what they felt was a flexible space for experimentation. But although the theatre space enabled the artists to test arrangements with lighting, camera angles, and Access Grid's settings, they eventually concluded that the space did not suit the intended users. The artists decided that making the audience comfortable and, therefore, more likely to participate in the work, was more valuable than maintaining the flexibility they felt they gained from a black box.

These artists were initially attracted to Access Grid because of its experimental possibilities. But after the first presentation of the event, all three realized that other media forms with fewer ties to academic spaces were better suited to their objectives. Although the black box was useful for experimentation, it did not contain the right kind of social transparency for their intended artwork. The Access Grid node setup in THEpUBLIC, on the other hand, represented a space that did not have academic ties. Unfortunately, the organisation itself experienced a significant restructuring in 2006 that halted the node's development (see chapter 6).

As this particular installation came into being, they realized that the single screen projection on either end could be achieved by other, simpler teleconferencing applications. Because of this multicasting and the academic network were not required:

FL – "[...] You found a way to sort of circumvent high bandwidth networks. Do you see that as something... Do you see the... Do you still see the same amount of importance in getting these... this high bandwidth?

GM – Yes and no. Um... No because the Internet bandwidth you can start having in your own house or the small companies, businesses, they can have in their own business is starting to get higher and higher and higher.

[...] It's yes, because: yes, it's true we have a 6, 7 or 8 meg or higher in our house. It's expanding. But the bandwidth... They've got one Gig. So whatever higher you've got in your house, the education network – [JANET] - has one hundred times more, anyway, or more. So if three or four years ago, I could do Streaming Tales just through Access Grid at the education network because I need that bandwidth which I do not get anywhere else, and now I can do it in my own house... If I want to do a project now which uses a 100 meg or 50 meg connection like a live event between two orchestras or whatever, you know... I cannot do it in my house... Now. Just the education network. But maybe in five

years time, I can do it in my house. The point is, the high bandwidth network is always going to be three to five years ahead or more. And if the media centres, artists, with education research centres in various universities, they can explore that in a creative way, by the time it gets to the general public, then they will already have projects they tested and it works. They can actually expand it in the normal Internet. That is, strategically, the cutting edge." (Graziano Milano, 8 March 2007)

This observation mirrored the basic argument formulated by some members of the MARCEL Network in section 4.3.2 and 4.3.3 (see also chapter 6): if artists and art centres could experiment with platforms such as AG before they were deployed to the general public, they could possibly develop innovative ways of using these technologies before being constrained by commercial interests (see squatting in chapter 5). But this privileged access also meant that such events could only be produced and experienced in locations such as universities or organisations able to access the academic high bandwidth network.

In the same way that the only remaining traces of Navigating Gravity were pictures and texts posted online, the synchronous aspect of this work also meant that the artists needed to create video and audio archives of the works that could then be distributed on other media such as DVDs or posted on websites (see chapter 6 for an account of my first encounter with a presentation of Streaming Tales) in order to explain and promote these works to potential financial backers and other interested parties that did not participate directly in the event.

4.4.4 Fourth encounter: Melt

I visited the Banff Centre, a secluded arts centre in the Rocky Mountains of Canada, in early January 2007 to get a better idea of how art centres like THEpUBLIC used Access Grid. I was specifically interested in the Banff New Media Institute's (BNMI) work with AG in general. I was also interested in a particular collaboration with artists working with the MARCEL Network called Melt in 2002. Speaking to the director of the BNMI, she explained to me that the drive in selecting the ICTs for these types of collaborations often came from outside the organisation:

"[...] artists are very sub-directed when they come here and so they are the ones that make their decisions about what technologies they're going to use, the delivery and all of those different kinds of things. Now of course, we have our suite of what we can support here, so you know, we can say "Well we have this... High-speed network. You're welcome to use it. We have technicians skilled with this type... these types of applications... If you

can use them or you can bring your own in, etc." But it's very autonomous, that kind of activity."[89] (Susan Kennard, 12 January 2007)

When I asked her if telematic installations and other installations that required high bandwidth connections were common at the BNMI, I was told that these types of installation were not as common as they used to be, or at least, that the demand for high bandwidth was not as pronounced:

SK[90] - "[We] did talk a lot about broadband and its application in the cultural and artistic community. That was quite a few years ago. I mean, the talk around has really died down. It's not considered... People... It's just sort of this invisible network now.

FL - Right.

SK - You know, and people... It is interesting. We're not seeing applications coming in the Banff Centre saying: "We want to explore this space conceptually." You know, that's just not the kinds of applications we're getting. Very rarely." (Susan Kennard, 12 January 2007)

I was taken on a tour of the facilities with the director of the Creative Electronic Environment (CEE) at the Banff Centre, Luke Azevedo. The Banff Centre as an arts organisation is a collection of well-equipped buildings with many studios. The CEE building itself included extensive television and video production and post-production facilities such as a large green cyclorama studio space for filming. He and I visited their Access Grid node, called the Collaboration Lab. At first sight, I was struck by how the node seemed to conform to a large degree to the standard layout for academic Access Grid nodes. I was informed that its installation was part of a wider academic project funded by the provincial government of Alberta as part of the development of a province-wide high-speed network. The rest of the building was networked in order to accommodate similar uses. When I enquired as to whether artists used the Access Grid node, he replied that scientists were the main users though some artists made use of it occasionally:

LA[91] - "However, this is utilised sometimes for adjudication of artistic projects. For the collaboration with projects that are off site. Those kinds of things. So, yes, there is integra-

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[89] The interview with Susan Kennard took place in her office at the Banff New Media Institute in Banff, Canada on 12 January 2007.

[90] SK will henceforth refer to Susan Kennard in interview transcripts.

[91] LA will henceforth refer to Luke Azevedo in interview transcripts.

tion into it. Uhm, but, most artists at this point have still not gotten to the point where they can function in this world. The media artists...Absolutely. Interdisciplinary artists... Some of them. The, uh, process of artists that are using what we would consider your standardised forms of arts such as paint and paper and print and those kinds of things and... And even those that are doing clay and ceramics, and those areas, this is not as much of a tool for them. However, it can be a tool if it's brought in in the proper means."[92] (Luke Azevedo, 12 January 2007)

By aligning itself with an academic research network, the Banff Centre was able to acquire an Access Grid node. The node itself was part of BNMI's larger "suite" of ICT services but the node's principal use was for videoconferencing. The level of Access Grid's technical standards remained important:

LA – "You'll notice that the microphone systems are different. I mean, some of our technical folks here just will not allow the...The desktop mikes... It's not going to happen. I mean, that's not what they want. They want to see things at a different level. So what we do is we put ourselves in a position where we can facilitate that." (Luke Azevedo, 12 January 2007)

When I asked him to further elaborate on how the choices for selecting new or maintaining current technologies to be used at the CEE were made, he replied that this was a complicated process:

LA – "[...]that's one of the things with technology you can't get caught up in is being the guinea pig for formats that then don't become formats.[...] Standardized forms of communication tools, standardized forms of production tools, although will shift and vary from what standardized means from location to location, will not shift and vary as far as how they function. Ok, so, from my perspective, I need to align with the world but I don't have to be exactly the same as the world. I just need to be able to be aligned with what our partners and what our duties are at that point. So each facility will have their own internal processes and then we function together as groups. Saying: Ok, 'yes' this, 'no' that. 'Maybe' this, 'maybe not' that." (Luke Azevedo, 12 January 2007)

Here Luke articulates an understanding of the importance of standards that is consistent with Becker's conceptualisation of the dissemination of conventions and similar to Castells' conceptualisation of network power (see section 2.4.3). The decision to design and use the Access Grid and its related standards did not take place in a vacuum. It was a careful considera-

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[92] The interview with Luke Azevedo was conducted in the Banff Centre's Access Grid node in Banff, Canada on 12 January 2007.

tion relative to the standards of other collaborators. When contrasted with the Susan Kennard's statement that artists made their own technical decisions, it became clear that even outside academic environments, artists were expected to negotiate technical conventions with support personnel. In this sense, academic computing departments and IT support within organisations acted as technological switchers (Castells forthcoming, see chapter 2): maintaining technical standards and acting as a bridge between the social worlds of new media and art worlds by providing information to artists and other support personnel. Just as the BNMI needed to 'align with the world', I wondered to what extent an artist working with them needed to align with their technological standards.

The artwork that had been produced in collaboration with the BNMI, Melt, was the result of a collaboration between Slavica Ceperkovic, who was completing her studies in new media arts at Le Fresnoy in France, and Nicholas Stedman, who was working at the time at the Banff Centre. The work was presented in both locations in February of 2002 (Stedman 2006). A video documenting the work described it as:

> *"A machine for melting ice controlled by a computer. A live video signal is streamed to Roubaix, France [Le Fresnoy]. Based on a viewer's touch in France, the block of ice slowly melts in Canada. The projection of the melting ice is seen live in front of them. Sensors are embedded in a table that measures the sensitivity of their touch. This measurement is translated through computer and sent instantly through the Internet. This information is received by the computer in Canada."[93]*

In this case, rather than projecting video images and sounds of people in real time, the actions of users in the node in France were telematically performed in Banff. The real-time image of the melting ice in France was therefore the only 'videoconferencing' taking place.

Much like the friendship that led Graziano, Alexandre Berthier and Karl-Otto von Oertzen to produce Streaming Tales, Slavica and Nicholas were well acquainted prior to this project. Slavica felt that she could trust the other to coordinate activities on his end. This trust was important because both artists had to make technical and aesthetic choices on either end based on the circumstances of the location. As she explained while playing a video clip of the artwork for me:

> *SC[94] – "[Nick Steadman and I] went shopping one day in Toronto, during Christmas, and that's when we actually bought the materials for [the artwork]. But otherwise I didn't*

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[93] See Online research documents: Ceperkovic (2006)

[94] SC will henceforth refer to Slavica Ceperkovic in interview transcripts.

know what it was going to look like, how he was going to build it [...]. I thought the scale would be much larger and I thought that it would be outside.

[...] So his problem was that it had to fit in the size of a deep freezer in order to freeze the ice because otherwise you couldn't. So we had to have access to a place that had a deep-freezer, a high end network connection, safety: you had to have because of safety precautions in Banff because it's a national park. You had to put fire extinguisher and you had to have it cleared by safety. There was a lot of things like that. Obviously you had to have access to welding to do all of the metal fabrications of it. And he did all of the electronics on his own. So we had to mail-order all of the electronics because there were no electronic stores in Banff because it's a national park. So that's the difficulties with building on the Banff side. And vice versa. A lot of it was shipping stuff back and forth."[95] (Slavica Ceperkovic and Galen Scorer, 24 April 2007)

Because she had initially studied at Ryerson University in Toronto, she could also count on additional feedback and support with technical tests from friends and students there. In a 2007 interview with her and Galen Scorer, one of the students who worked at Ryerson at the time of the event's production, I asked them whether familiarity with collaborators was important:

GS[96] – "Yeah, and build a sort of, a kind of trust between or familiarity with what the other person is doing. [...] If I would do a collaboration with [Slavica], and she was in France again that's basically because I'm sort of very familiar with her style of work. I understand you know, what she's capable of, you know, her strengths, her weaknesses and she would know that about me. We could base it on a relationship prior. So I'm not saying it would be impossible to do that without knowing someone before hand but it would be... I would find it very difficult using such a restrictive environment." (Slavica Ceperkovic and Galen Scorer, 24 April 2007)

For Slavica, the challenge in designing the artwork was to make distance visible and credible, to enable users to perceive and understand the characteristics of the mediation, the distance of interaction:

SC – "[...] because the event itself was the first time we did the install of it and ice melting, because its reactivity is so slow, people didn't know they were actually affecting another environment necessarily. It was over time, it was a very slow effect. Because we had

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[95] The interview with Slavica Cerpovick and Galen Scorer was conducted at the Canadian Film Centre in Toronto, Canada on the 24 April 2007.

[96] GS will henceforth refer to Galen Scorer in interview transcripts.

it last over several hours. This is the one thing about these interactions, how we create a long lasting, you know, durational, interaction. You know, what would that look like? Having an event is very different than doing a performance. I don't know. But something was very different and even more sculptural than that? So people were asking: "How do I know this is Canada? How do I know it's not my freezer? How do I know it's not taped video? They were really interested in the authenticity of the experience, you know: "is it really...?" And for me that was integral about it. You know: "of course it's Canada, of course it's real time, of course the time difference." And how that becomes transparent in the work? I don't know..."(Slavica Ceperkovic and Galen Scorer, 24 April 2007)

Here Slavica related a similar challenge for Melt to the one identified in Paul Sermon's example: to mediate distance in a way that made it perceptible to the user. In this case, the distance in time needed to observe the melting of the ice based on the user's actions in France had to be made as credible as the distance between the two nodes. As with the other two previous encounters, Access Grid as a media form was of lesser concern to the artist's design than the overall experience produced for the user.

4.5 Conclusion

In this chapter, I set out to construct the career of an ICT, particularly how it is designed and used by artists who work with the conventions of telematics. Section 4.2 constructed a socio-historical trajectory of both high bandwidth academic networks and Access Grid as media forms developed within an academic discursive space. Section 4.3 then introduced the conventions of telematics and how this could be applied to the design and use of Access Grid nodes, particularly within the MARCEL Network. Finally, section 4.4 developed four encounters with artworks that employed Access Grid in order to construct a formal understanding of Access Grid's design and use by artists. Access Grid and the high bandwidth academic network were used as media forms by art world actors to produce artworks through a combined process which I have designated as experimentation - the work of designing and using/consuming ICTs as art world conventions. These experimentations, situated in particular times and places, constructed a particular set of conventions for Access Grid among those who design/use it to produce, distribute and appreciate telematic artworks.

But such an account does not provide us with a deeper understanding of the relationships these artists have with ICTs over time, particularly, whether or not they are successfully able to articulate a conduct of maverickness in relation to the design and use of ICTs. For this, the following chapter will construct a second thread, that of an artist's career working with new media.

Chapter 5

AN ARTIST'S CAREER WITH NEW MEDIA – DON FORESTA

5.1 Introduction

This chapter is an historical account constituted by Don Foresta's career as an artist, beginning with his background in the video and new media art world as well as his work with MARCEL. The aim is to offer an account and an analysis of his work in articulating the artist's role and its relation to ICTs through his publications and other projects. The account presented in this chapter is based on participant observation, document analysis and interviews with him as well as with other artists and colleagues (see chapter 3 for the methodological detail). This is an historical account of the artist's career leading up to, and including, his time as coordinator for the MARCEL Network. It describes how he has articulated a relationship between the artist role and new media technologies over the years and analyses the power dynamics surrounding such a relationship – whether or not it enabled him to shape the constraints and affordances of the ICTs he designed and/or used.

Chapter 2 fleshed out a conceptual framework for understanding the work of contingently articulating an artist's role – as suggested there, such a role is not a fixed state but one that is constructed by the individual's conduct and by other social, cultural, and technological forces. This chapter is subdivided into several biographical moments: the pre-artist moment, video moment, telematic moment. The approach is informed by a Foucauldian analysis of governmentality as developed by Nikolas Rose and particularly Paul du Gay as a discursive practice in relation to personal sovereignty and discipline or "conducting conduct" (du Gay and McFall 2008: 11) as described in chapter 2. It argues that a specific form of governmentality – in some ways parallel to their conceptualisation of 'entrepreneurial government' (du Gay 1996: 186-193) – called maverickness is (re)produced in Don's articulation of the artist role. Maverickness is a particular historical discursive construction for the conduct of artistic agency which can, in turn, be deployed as a source of power in an art world. The previous chapter hinted at some of the ways in which it is deployed through conventions and standards (see chapter 6 for more detail). The artist's career is not examined as an illustration of structural constraints and support as in White and White's Canvases and Careers (1965). Rather, each moment consid-

ered in this chapter examines Don's prescriptive statements about the performance of the artist's role in relation to the design and use of ICTs for the production of art.

I have encountered many other artists over the course of the research. Some members of the MARCEL Network, some not. By selecting Don Foresta as the artist's career thread, I do not intend to infer a preference for, or a prioritisation of, his career over that of others. As explained in the methodology chapter (chapter 3), this career was retained as the artist's thread partly out of circumstance, partly because of his status as one of the MARCEL network's founding members and its membership coordinator (see chapter 6) and also partly due to this career's longstanding ties to the research topic and to media art in general. The last section of the chapter (section 5.8) compares Don's articulation of the conduct of maverickness to that of other individuals encountered over the course of the field work for the case study.

5.2 Don Foresta

I first met Don in early May of 2005 after submitting my application for the LSE research studentship that would fund my research. Hoping for better information about MARCEL, I arranged to meet him at a restaurant located in what he referred to as his regular London hotel near the Russell Square tube station.

Don is a tall older man with tousled white hair and a thick grey moustache occasionally surrounded by stubble. Judging by pictures, he has worn this moustache since at least the late 1970s. He wears the casual dress of an artist – chequered shirts and jeans are his usual attire – and he often carries with him a leather satchel with fringes (leather work being one of his hobbies). If you meet him on his way to or from an airport or train station (which is often the case), he also trails with him a mid-sized wheeled travel bag.

An early episode in which I witnessed Don explain his interest in Access Grid (AG) as an important activity for the MARCEL Network, and for artistic practice in general, took place in conference room A318 at the London School of Economics on 21 March 2006. This was during the second day of the MARCEL Network's Website Managers' meeting. Though the explicit goal of the meeting concerned the network's management of the website (which is discussed in chapter 6), the meeting was also a pretext for existing and potential MARCEL members to meet face-to-face and discuss their current and future projects. Fifteen individuals participated in the meeting, all seated around a large rectangular conference table in the centre of the room. They included representatives of media arts organisations or research centres as well as teachers and students from academic institutions from parts of western Europe and North America. This was an important meeting for Don since, as coordinator of the MARCEL Network, it could determine the future of MARCEL's website and the network

in general. At one point, during the latter half of the day, the conversation turned to the importance of indicating whether or not members listed on the website were AG enabled.

Participant: "I wonder if this high bandwidth discussion is still the big thing?"

DF[97] – "I think it is. I think it's absolutely essential for the simple reason that it allows the maximum of experimentation. For instance, today... Two of the very active members of the MARCEL in Helsinki and Alaska are actually doing a very, very high bandwidth music performance that will probably use about 35 megas. So that's a different kind of experimentation that obviously is a very important part of what we're trying to do. So... But at the same time, I agree that there's an evolution going on and we're going to find different tools coming along, again for different things. And...I don't think anybody is wedded to Access Grid as being the only solution. Not by any means. And when we communicate with [one of the other MARCEL members] because he cannot get his school to install Access Grid... We do it with iChat when we do, like, three or four connections over iChat. And we've done a little experimenting doing courses online with iChat. So I think that's one of the objectives of MARCEL is to explore all those different possibilities as they come along and to keep that open. Access Grid is a platform that's being promoted..."[98]

A debate on Access Grid's usefulness and the prospective importance of high bandwidth for artists and the general public ensued. This conversation offered an opportunity to examine Don's representation of the practice of experimentation and Access Grid's importance within such a representation. Here, AG was mobilised as a potential 'solution' to experimentation which was consistent with the analysis developed in chapter 4. Don presented it as a tool that would allow MARCEL to 'maximise' experimentation without dismissing other, more widely available technologies. Nevertheless, for him, Access Grid represented an opportunity to occupy the academic high bandwidth network and influence its design and use:

DF – "The other side too is [that] the objective of MARCEL was to be part of that research... And to be part of that development. So that we're not confronted with the situation where in 10 years from now we have a new medium that exists and art is excluded as we've seen throughout the 20th Century. Every single communications media that was proposed in our society, art came to it a generation later and it was too late. And if you look at all of them, that has been the case, so art, artists have never participated in the evolution of a new media."[99]

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97 DF will henceforth refer to Don Foresta in interview transcripts.

98 See Annex 1: MARCEL Archives 00086

99 See annex 1: 00086 MARCEL Archive

Work with Access Grid represented an investment or commitment (see chapter 4) that could secure a particular – but unclear – position for artists in the future of online networks. Here was one of my first encounters with Don's work of classifying the artist in a distinct role that needed to be defended or nurtured, a role that could be included or excluded from media forms[100]. His argument suggested that, through experimentation with an emerging media form, artists were able to define its parameters, to design the media form itself. Aspects of this objective were consistent with the process of experimentation identified in chapter 3 but the disagreement among the participants suggested I should dig deeper into the individual articulation of the artist as an "experimenter" – as one who works with ICTs through design and consumption/use. I realised then that Don expressed a particular relationship to the media form that was not necessarily shared by other participants in the meeting. I would have to uncover what underlying discursive construction informed his conduct of experimentation with ICTs.

5.3 Non-artist moments

Don was born Donald Anthony Foresta on May 26th 1938 in Buffalo NY, United States of America. In one of four interviews conducted with him over the course of the research (see chapter 3 for methodology), he explained to me how his working class background in Buffalo in no way anticipated his career path in the arts: he could not recall any artworks on the walls of his childhood home. A formal introduction to the arts came only later in life in university thanks to an introductory undergraduate course on the history of art that "probably stopped around 1900"[101] (Don Foresta, 22 June 2007). He did not view art as a significant part of his childhood yet he quickly gained an interest in certain artists by the time of early adulthood, notably the French-expatriate artist Marcel Duchamp.

This interest in the artist Marcel Duchamp would become instrumental in his later articulation of the artist role and his selecting the name for MARCEL in homage to the artist (see section 5.6.1). His identification with this artist, as well as his admiration for Henry Bergson and Teilhard de Chardin, French icons of culture and philosophy, laid the ground for his esteem of France. Such an identification also implied certain art world allegiances to contemporary artists of the 1960s and 1970s such as Nam June Paik, John Cage and other members of the Fluxus group who traced their artistic influence back to Duchamp (de Duve 1997). These art-

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[100] Here is a discursive technique that came up frequently: the timeline or the project list (see chapter 6). Don frequently mobilised historical timelines in order to put his accomplishments or objectives in perspective.

[101] The second of four interviews with Don Foresta was conducted in an office at the department of Media and Communications at the London School of Economics in London, United Kingdom on 22 June 2007.

ists would function as art world reference points for many other members of the MARCEL network, particularly those familiar with art history and video art (see section 5.8).

Don went on to graduate from the University of Buffalo in 1961 with an undergraduate degree in American History and Government. He later attended the Johns Hopkins School of Advanced International Studies where he was awarded a Master's degree in 1971. In parallel with his studies, he continued on a career path in government, working from 1961 to 1976 as a member of the US Foreign Service in posts in Africa, Washington and finally, in Paris as of 1971. It was at this point that Don was named director of the American Cultural Centre in Paris.

A number[102] of individuals encountered over the course of the research suggested that it was his background in international diplomacy that provided Don with the networking skills for which he would later be recognised. When asked whether this was in fact where he learned his networking skills, Don countered this characterisation by inverting the premise:

> *DF – "I didn't learn diplomatic skills. I think I became the diplomat because I was that kind of a person that liked bringing people together. Long before I was involved in network, my artist friends called me 'Mr. Network' because that's what I would do. If I met somebody and they said 'Oh, you know, I'm doing this' I'd say 'Oh well you gotta meet so-and-so.' And that's just my personality. So that was just a part of that. So it's the other way around, I was a diplomat because I am like that, and because I am like that I got interested in the network." (Don Foresta, 22 June 2007)*

Don expressed a reflexive understanding of his personal history which in itself seemed necessary for work as an artist. The individuals interviewed for the case study who strongly identified themselves as artists expressed well-developed reflexive understandings of their personal narrative as integral to the reasons they worked as artists[103]. Don knew that some who were familiar with his work as a diplomat associated this past work with his role in the arts. But for him, this diplomatic career was more the result of his own predispositions rather than a cause of his perceived skills as a networker. His background and training in diplomacy also introduced the difficult task of classifying Don as an artist. As later sections of this chapter demonstrate, the artist's role was not consistently applied to Don by others or even by Don himself. In some cases, his background and lack of traditional artist's training were given as explana-

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[102] Over the course of the interviews, seven of the interviewees emphasised the importance of Don's abilities as a networker. My very choice of Don as a gatekeeper to the MARCEL Network supports this.

[103] See Peterson and Anand (2004: 317) for how life history can serve as a resource for the artist's career. This served to support the autobiographical interviews as a research methodology. See chapter 3.

tion[104]. Nevertheless, these early ties to government institutions and other organisations dedicated to public service would remain a fixture in his professional career. Don also believed that his close ties to the United States influenced other aspects of his social place in France as an expatriate. He would become a French citizen in 1996, expressing his frustration about his homeland, yet he would also regularly return and, to some extent, be viewed by many around him in France as an American. In interviews, Don expressed having a difficult time during his early days in Paris because of his affiliation with the United States Information Agency, combined with perceived common anti-American sentiments in France.

5.4 Video-art Moments

The last five years of Don's employment with the US Foreign Service in Paris were as the Director of the American Cultural Centre in Paris on the rue Dragon. It was there that he built a reputation for showcasing early Avant-garde video artists working in America such as Nam June Paik and Woody and Steina Vasulka. Like other civil servants before him, he would choose to resign from the Centre and from the United States Information Agency at the end of his term in order to remain in Paris (Arndt 2005: 372-373).

Having left the Centre Don started his first collaborative art project, a video called "Paris à la carte", with two other artists. The project was made possible through a 1976 Rockefeller Foundation Grant and consisted of producing a video art piece as part of the Visa series conceived by the artist Nam June Paik and supported by the Cable Arts Foundation out of New York (Sturken 1987). He later assumed the role of artistic director for the independent Centre for Media Art at the American Centre in Paris from 1978 to1981.

It was therefore with video that Don's preoccupation with ICTs as media forms first manifested itself. Frustrations arose with the perceived formal limitations available to video as an artistic convention, specifically with the means of production and distribution related to television as a broadcast medium and the limited presence of artists and video art on television in the United States and Europe. He shared this sentiment with other American video artists and enthusiasts of the time who saw television networks as "monolithic institutions" (Sturken 1987: 12) or a vast "wasteland" (Dawson 2007: 525). Don also expressed a worry that publicly owned European television networks were in danger of being transformed into similar networks as those of commercial television in the United States. For him and others who shared this view, artists represented agents that could bring about television's transformation as a media form into an enlightened art world convention better suited to creative ventures. Don

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[104] Three respondents who worked closely with Don for extended periods of time indicated that they did not view him as an artist because of his training.

participated in the articulation of the work of the video artist as being in opposition to the media form of commercial television. In a 1982 interview on video art, he already employed aspects of experimentation to contrast the two worlds:

> *DF – "Although, research and independent creation in the field of video began as an alternative to television. In the beginning, many video-artists were disappointed by the modest resources available to video and how few possibilities for diffusion existed. These past few years, there has been a tremendous amount of progress, especially with cable. There was therefore 15 years of marginal experimentation and cable made everything explode in these last couple of years." (Veaute 1982: 31, author's translation from French)*

For him, technological progress represented a catalyst for greater creative freedom and also enabled experimentation as an alternative to television's production and use practices. Commercial television and video art were represented as two distinct art worlds based on similar yet incompatible media forms.

Don frequently expressed in his writings[105] at the time that television had been designed to appeal to the lowest common denominator, be it in North America or Europe. Its commercial and/or government overseers were only interested in its development for greater economic or political gain. Don's own portrayal of television in writing and in interviews was as a media form designed and used as an art world convention for entertainment rather than enlightenment. These portrayals included a recurring critique of television's omnipresence that was tinged with a grudging admiration for its potential as a channel for the dissemination of information. Don's representations of television in the sample analysed varied from the innocuous, but bland and everyday, to the oppressive and hegemonic. Nested within this characterisation was a specific articulation of the artist's relationship to television. In some cases, Don explicitly referred to the artist as being 'excluded' from the media form:

> *"The artist has been almost universally excluded from television as being irrelevant to that medium's objectives." (Foresta 1989: 105)*

This was a generalised attack levelled at television as an art world convention – its overall content and social structure[106]. Such an exclusion was very closely related to his conceptualisation of who had control over the media form; namely commercial and/or political interests

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[105] Thematic analysis of the documents identified at least three instances in which this is the case.

[106] Of the 51 documents analysed, 30 instances were identified representing commercial television's design and use as dependent on commercial interests.

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who determined all of its aspects including media experiences. He acknowledged in other texts that certain other art worlds were represented on television – such as theatre, dance, and classical music – but that the properties of their combination negated one another: these other art worlds and their related formal conventions were simply broadcast using the conventions of commercial television (specifically, see Foresta (1979)). Without artistic experimentation, he believed that such combinations of art worlds would only lead to television's absorption of these other art worlds within its own conventions of representation.

Video art was presented as television's more flexible alternative where artists were given a central role. Flexibility and experimentation for Don went hand in hand (as in chapter 4). However, flexibility touched on the artist as an individual able to modify or control video technologies for intuitive personal expression. Some of the attributes that Don claimed made up an exemplary video artist included the ability to create works by mastering the use of video technologies as well as prefiguring aspects of video's development as a media form, or designing technological improvements for video. The video artist Nam June Paik frequently served as Don's model for such an artist[107]. In Don's references to him, Paik was not only a maverick for being one of, if not the, earliest artist to use video technologies to produce artworks. Through artworks like Global Groove[108] in 1973, Paik also prefigured many socio-technical innovations that would take place in commercial television (such as channel surfing and access to multiple international channels on television). Paik, for Don, was therefore a prototypical artist maverick in that he not only contested conventional uses of media objects but also designed them which in turn instigated new media forms.

5.5 Telematic moments

Don's career did not smoothly transition from video to online telematic work. Nor did the change take place in one life-altering break in his career. Many of the interests and beliefs that would guide his artistic experimentation with digital networks – including the relationship between art and science, the importance of networks for the distribution of artworks, the mastery of media forms for the production of artworks – were already being developed with video.

[107] Of the 279 instances of maverickness identified in the corpus of texts selected for this section of the case study, 16 instances referred to Jam June Paik as both a maverick designer (8) or user (8) of video technologies.

[108] Louise Poissant (2003: 233-234) describes Global Groove as an early example of "collage" which involves re-appropriating found video footage, in this case television commercials, using a synthesiser.

Don first experimented with online networks over telephone lines thanks to an invitation from Otto Piene and Aldo Tombelini, representatives of the Centre for Advanced Visual Studies at MIT, to participate in an artistic event using slow scan television[109] (SSTV) in 1981.

> *[...] "we basically took the press photos of each country's president – Giscard d'Estaing in France and newly elected Ronald Reagan in America – and cut them into sixteen pieces and photographed these little pieces with the correct machine which was called a robot. It was a slowscan machine. And then we would send those images over the phone. Of course they would pick up parasites. Then on each end we photographed the results on the screen that we received the images on and then did a big blow-up and pinned that on the wall to make a mural."[110] (Don Foresta, 1 May 2007)*

Don met Otto Piene through other events related to video art and, as a result, all of the work of preparing and coordinating the event was conducted by phone and fax including Don's statement for the show's publication (Foresta 1981) These first experiences using long-distance video transmission and online coordination of events between multiple distant points piqued his interest: "I loved it and I... I really got hooked. I thought: 'You know, there's something in this.'" (Don Foresta, 1 May 2007).

Don helped organise a similar event as commissioner for the American contingent of the 1982 Paris Biennale. The contingent of American photographers, who were unable to attend the event because of federal budget cuts, sent their works to Paris via SSTV. By 1986, he was invited as co-commissioner for a section of the 42nd Venice Biennale named Art and Technology with Roy Ascott[111] and Tom Sherman[112]. This was the largest high-profile new media event of its time where "over 100 artists in three continents interacted through networks involving computer, videotext, slow-scan television and facsimile" (Loeffler and Ascott 1991). This comprised of a similar image exchange planned between multiple cities in Europe, North America and Australia. On this occasion, however, some of the artists connected using Macintosh digital personal computers. Despite this new technology, transmission time still took up

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[109] Slow scan television or narrowband television, is a method of still picture transmission "usually lasting from about eight seconds to a couple of minutes" (http://en.wikipedia.org/wiki/SSTV). It is distinguished from broadcast television because of its use of a much smaller bandwidth.

[110] The first of four interviews with Don Foresta was conducted in a hotel room in central Montreal, Canada on the 1 May 2007.

[111] Wilson (2002: 29) refers to Roy Ascott as a "longtime pioneer" of new media art who has worked extensively with the journal Leonardo.

[112] Tom Sherman is an American video and media artist and writer who has worked extensively in Canada. See Online research documents: Moreau (2004)

to ten minutes for an image of 50k to appear on screen. For Don, these time lapses at once represented a problem and an advantage:

"You really had to be patient. And the nice thing with the [SSTV] was that it would come in line by line. So it was fairly dramatic. We had slow scan at the Biennale too. And it would come in line by line so you could sit there and watch the screen and it was kind of nice to see this thing unfolding. When we switched over to [Macintosh personal computers], you basically had the bar. You know, the black bar going across the screen waiting for the image to come in. And it certainly lacked the drama. But it was much more flexible. So at that point I decided to stay with computers." (Don Foresta, 1 May 2007)

As developed in chapter 4, the mediation of the transparency of distance was an important consideration in the media instance's design. By changing media forms, new considerations of time and space came into play. Flexibility was also explicitly deployed to justify the transition from one technology to another[113]. All of these innovative events based on networked connections took the form of punctual projects that arguably represented a different, more involved form of curatorial work for Don. He and his collaborators invited artists to produce artworks using ICTs that had been selected for the most part by the curators and/or the sponsors of the event (Apple and France Telecom, for example, in the case of the Venice Biennale (Gervasoni 1986)).

All the while, Don also worked as a teacher of video art (see section 5.6) and curator for other events. By the late 1980s and early 1990s, these individual projects were represented under the banner of organisations or networks (see chapter 6) rather than individual events. To manage some of these events and other freelance work, Don created a private company known as International Media Consultants. In 1988, he also created the organisation Art en Réseau with the help of collaborators including Georges-Albert Kisfaludi, his former student. This was an academic network for the distribution of video art tapes between art schools. Together, they assembled approximately 300 art tapes with the help of the National Studio of Contemporary Art in Le Fresnoy as the central holding point. Part of this ambitious project included developing a system by which the videos were distributed over Minitel, the French digital network created by France Télécom in the early 1980s (Flichy 2006). But the technology proved to be unsuitable for such transmissions. The project would later be discarded due to the logistical challenges of distributing the physical cassettes and the copyright issues surrounding their use.

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[113] An example given to me by Don for the case of the digital computer over SSTV was that it afforded the artist with the ability to "draw" online instead of posting images.

Contacts with the Americans, Kit Galloway and Sherrie Rabinowitz[114], led to the production of a few online events as the Paris branch of their Electronic Communication Access For Everybody or Electronic CAFE. Don and Georges-Albert Kisfaludi soon inaugurated the Paris antenna of the Electronic CAFÉ International out of the Cité des Sciences et de l'Industrie in La Villette in 1989 as part of the festival PARIGRAPH (in some cases, this branch of the Electronic CAFÉ was also referred to as the Studio des Images) using the Numeris network[115] and Macintosh Computers. Events included the 9th Documenta in 1992, 49th Venice Biennale in 1993, and the Lyon Biennale in 1996. Éléonore Hellio, one of their collaborators at the Electronic Café International in Paris described her time working there as follows:

"The Paris branch of the Electronic CAFÉ International was a nomadic mini-laboratory. We didn't have a permanent location. Our the time we spent in various locations would fluctuate from one to the other: the Galerie du Sous-sol, the Galerie Natkin-Berta, the Espace des Halles, the Webbar, as well as different institutional locations such as the Cite des Sciences et de l'Industrie, the Fort d'Aubervilliers. We organized videoconferences in an amphitheatre at the CNAM as part of a pedagogical project with Stéphane Natkin".[116]

Subsequent experiments with ISDN[117] led Don and Georges-Albert to create Artistes en Réseau in the latter part of 1991 as a means of connecting "14 cities in 4 countries, principally in France but also in Germany, the United States and Japan" (Foresta and Mergier 1994: 80), (see chapter 6 for an in-depth analysis of this period). Documents and accounts from this period are unclear as to exactly which events fell under the banner of Artistes en Réseau and which came under the banner of the Electronic Café International. This may have led to eventual disagreements between the different participants and the eventual dissolution of the relationship between the Paris branch and the Electronic Café International.

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[114] The two had met Don in Paris through mutual friends and would go on to produce the Electronic CAFÉ as an event for the 1984 Olympic games in Los Angeles. A later permanent version was established in 1989 at the Santa Monica 18th Street Arts Complex in Los Angeles (See Online research documents: Rabinowitz and Galloway 2000). Wilson (2002: 515-516) refers to the work Hole in Space by Sherrie Rabinowitz and Kit Galloway as "legendary in the ground it broke in geographically dispersed collaborative art."

[115] Numeris was a commercial version of the French RNIS which stands for Réseau Numérique à Intégration de Service, a digital online network.

[116] See Online research documents: Hellio (2005), author's translation.

[117] ISDN stands for Integrated Services Digital Network. "In a videoconference, ISDN provides simultaneous voice, video, and text transmission between individual desktop videoconferencing systems and group (room) videoconferencing systems." http://en.wikipedia.org/wiki/ISDN

By this time, telematic events organised online had shifted from collaborative drawings in the style of a "cadavre exquis" – where a drawing would go back and forth between artists, altering the drawing each time – to online performances with musicians such as Luc Martinez in Nice, France or videoconferencing events. The pedagogical dimension of these events was also never too far from Don's concerns. In 1994, Don already expressed an interest in producing an Art and Science course online that would later appear as a project in the Souillac II report and contribute to the template for the Global Threads project[118].

The difficulty in identifying Don as an artist resurfaces again here. Many of these works did not involve "his" artworks because they involved the participation of a number of other artists and support personnel even though Don played a significant role in selecting, designing and coordinating aspects of the event or artwork. By 1996, both Georges-Albert, who had recently been appointed to a teaching position in Nantes, and Don expressed frustrations with what they perceived to be government and commercial resistance at a national and international level to supporting artists' high bandwidth networks. They also felt that the exertion of independently solving logistical needs for each networked project was too much strain. These observations led them to abandon their artistic projects and focus on other directions[119]:

"And we said to each other: 'You know, we're still doing the same thing. Even though we switched into performing arts and we're getting better and the bandwidth is a little better, we're still basically doing the same thing.' And I said: 'Yeah, you know, we really have to get past this technical mess. We have to make the technology transparent and just go right to the content.' And I said: 'The only way we're going to do that is to get institutions that can handle this connected and get permanent spaces where people just walk in and turn on a connection like they do a light.'"[120] (Don Foresta, 31 January 2008)

Despite their decisions to move from the cadavres exquis to video and dance online, they still felt that the interrelated conventions that enabled their work were too repetitive. They blamed the cause of this problem, for the most part, on technical limitations. It was this diagnosis that informed Don's choice to shift from organising punctual events to a quest for a permanent online network for artistic experimentation.

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[118] See section 5.7.3 for more details on the Global Threads project

[119] In interviews, both Don and Georges-Albert identify this moment as significant in their careers. Don also recounts this event as one of the early moments that shaped his interests in MARCEL.

[120] The third of four interviews with Don Foresta was conducted in his residence in Paris, France on the 31 January 2008.

In Don's quote above, he explicitly referred to transparency (see chapter 4) as a permanent broadband network. In this case, transparency was articulated in a positive fashion: as something that allows the artist to "go right to the content". Georges-Albert and Don's frustrations were not unique as a number of the artists from that period (see section 5.8) encountered during this study related similar frustrations about the level of complexity in getting connected with sufficient speed and quality. In written accounts or in interviews, Hellio, Georges-Albert and Don related how one of the main challenges for members of Electronic Café International was to continually solve technical issues in order to maintain connections. In this sense, the wandering eye brought-on by maverickness allowed Don to search elsewhere for other technical solutions that enabled them to remain connected "transparently". The solution devised resurfaced the issue identified in my theoretical chapter (chapter 2) in which maverickness is articulated in relation to the need for greater ICT standardization.

The way in which Don chose to stop producing events also demonstrated how the maverickness extended beyond the artist's role. Don set out to look for creative affordances and means of identifying and contesting established standards despite the fact that he had stopped producing and curating events. Georges-Albert and Don did not see themselves at this point as artists, but as sympathizers or enablers. Arguably, it was not the role of the artist that was Don's sustaining resource among other artists and enthusiasts but his maverickness – his seeming ability to intuit or predict future developments in ICTs and their relation to art and to articulate contention of established conventions. But such a characterisation of Don's individual relationship to the artist role and experimentation with technology may oversimplify the diversity of working as an artist with new ICTs. He had no formal training as an artist and so much of his work was as a teacher, supporter, facilitator or curator of artistic work. In this sense, maverickness extended beyond the frame of the artist as producer of artworks and into other related working practices. Maverickness was not conducted as a uniform prescription for artistic practice but instead found many different and, in some cases, competing manifestations. The following section explores one such practice in Don's art world career, namely teaching.

5.6 Teaching: maverickness in the classroom

At this point in the chapter, the construction of Don's career thread runs the risk of overemphasising individual initiative over contextual support and constraint. A significant organisational tie throughout his career was the academic environment, specifically University Art departments and Art Schools. Upon leaving the American Cultural Centre in 1976, Don also helped create the first video art department in France at the École Nationale Supérieure des Arts Décoratifs (ENSAD). Don's status as an early proponent of video art in Paris art world

circles and ties to internationally recognised video artists in the United States made him an expert in this new emerging art world. Part of his work in establishing the department involved creating an ideological programme and assembling a series of technical support structures for training such as video editing suites. His ideological programme was in large part consistent with his vision of a video art world/television art world dialectic presented in section 5.4 above (see also 5.6.1 for an in-depth consideration of writings on the matter). Work within the department also allowed him to invite recognised contemporary video artists to work in the department. This was the start of his work as an academic, a continuous involvement that was still underway over the course of my participant observation from September 2005[121].

Marshal McLuhan's theories served as a significant intellectual influence along the way, particularly in formulating an argument for the artist as an "educator of perception"[122]. This meant that it was through the work of the artist that new ways of perceiving, and thereby understanding, the world were possible. Arguably, Don's pedagogical and artistic work were linked to an articulation of new formative experiences with ICTs. Despite Don's emphasis on the importance of focussing on the production of content in the previous section, he remained consistently preoccupied with the affordances of media form: artistic innovation was brought about at the level of transforming the art world conventions of the media form.

Don perceived teaching as a good way of supporting art work (Foresta 1977). Teaching also afforded Don the opportunity to identify collaborators. Many a student encountered in the classroom would later become a co-conspirator in artistic projects. One of his students at EN-SAD in 1986, Georges-Albert Kisfaludi, became one of Don's long time collaborators, first working with Don's independent company, the Internet Media Consultants, later becoming a partner in the development of the European branch of the Electronic Café International, Artistes en Réseaux, and the Laboratoire de Langage Électronique. What is more, teaching served as an early introduction to alternative networks of distribution, particularly for video art works. Work within these academic circles arguably represented access to a different, yet interrelated, well-funded and stable network of individuals and resources from video art worlds. Creating a video art department was both consistent with media categorisation in the arts and allowed him time and resources to better articulate the classifications of conventions of media form. As he would later explain in his book Monde Multiples:

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[121] Although retired, Don continued to give lectures and seminars in France and in the United Kingdom.

[122] There are 13 direct references to McLuhan in the documents analysed, 10 of which explicitly refer to the artist as an "educator of perception".

"As a video art professor during its early days as an art form, I had to develop a logic and a philosophical basis for the works produced in the field. I wanted to present a semblance of order and continuity to students concerning late 20th century creativity. Meanwhile, more and more artists were appropriating – in often random ways – the instruments born of these new technologies." (Foresta 1991b: 7, author's translation)

Seen in this light, the construction of the art world dialectic between video art and commercial television was partly a means of providing "a semblance of order and continuity". Over time, he earned a summa cum laude doctorate in Communication Science from the University of Paris 2 and was named Chevalier of the Order of Arts and Letters by the French Ministry of Culture in 1986. In 1995, he founded the Laboratoire de Langage Électronique in collaboration with Georges-Albert Kisfaludi while he worked as a Professor in the interactive multimedia department of l'École Nationale Supérieur d'Arts, Paris/Cergy. This was a network similar to Artistes en Réseau but was presented as a more permanent infrastructure between academic art departments in France – Bourges, Cergy, Lyon, Nancy, Nantes, Strasbourg (see chapter 6). Its objectives were mainly pedagogical and included developing interdisciplinary programmes, particularly between artists and engineers through assigned technological collaborations on projects (Deshayes et al. 1998: 98-113). The students were asked to collaborate in groups to produce artworks. A report published by the Ministry of Culture in 1998 examining media teaching practices in France noted the extent to which Don's philosophies occupied a central role in his teaching. It described Don's teaching style as highly personal and distinctive (Deshayes et al 1998: 100). The philosophy outlined in the report was relatively consistent with the principles enumerated in his book Mondes Multiples (see below).

Students at ENSAD, and other Art Schools such as the École Nationale Supérieure d'Arts Paris-Cergy, the National Studio of Contemporary Art in Le Fresnoy and the Wimbledon School of Art would contribute members to the MARCEL Network. All of the four former students interviewed for this study who had also collaborated with Don over the course of his career brought out Don's ability to predict the future of technological development as an indicator of his ability as an artist and a teacher. It was this prescience that they, among others, suggested as one of his main qualifications as a collaborator and teacher. Don seemed to have the ability to synchronize his appropriation of media forms to technological development.

By this point in Don's career, namely between the early to mid-1990s, many of the elements of the MARCEL Network are already hinted at in the interviews and texts sampled: research laboratories for artistic experimentation, advanced network connections for exchanges between artists and audiences. But his experiences working with SSTV and other ICTs, in combination with his experiences working in academia, led him to adopt a broader stance on

technology as media forms. His book, Mondes Multiples would allow him to develop these ideas further.

5.6.1 Mondes Multiples

Don handed me a signed copy of Mondes Multiples as a gift in November 2005. The book was published in 1991 by Editions BàS and co-edited by the Fondation Européenne des Métiers de l'Image et du Son. It represented the maturation of his reflection on the relationship between art and science that had already become a leitmotif in his teaching, publications and artworks. Much of the book attempted to establish parallels between the nature of scientific research and innovation with that of artistic practice. Among the many theories and concepts deployed to examine the claim that scientific and artistic innovation were similar was Kuhn's conceptualisation of the paradigm as a "set of theories about reality based on an arrangement of universally accepted facts" (Foresta 1991b: 17, author's translation). Don used the concept of the paradigm as a means of bridging theories of relativity from physics with cognitive theories of subjective human perception and expression. The title of the book is itself attributed to Hugh Everett's "Many-Worlds" theory of quantum mechanics (see, for example, Foresta 1991a: 140). The objective of the book, as stated in the introduction was to explicitly define such a role by elaborating its ties to scientific research:

"This book attempts to understand the artist's and the scientist's role. To see how their different visions of the world penetrate humanity's collective subjectivity in order to represent objective reality. This will lead to the adoption of a new attitude towards science – now conscious of its fallibility, but also of its creativity – and redefine the contemporary artist's role as a researcher." (Foresta 1991b: 8, author's translation)

The book was written as a kind of manifesto that defended the importance of the artist's role in the process of innovation for ICTs and their subsequent appropriation. Although the book dealt with collective aspects of research, both the artist and the scientist were referred to in the singular, third person. Both the artist and the scientist were described as individual moral actors whose work shaped and would continue to shape human perception and understanding. Just as Nam June Paik typified the maverick video artist, scientific thinkers such as Einstein were presented as mavericks for their social worlds; able to bring about radical social and technological transformations.

The seventh and eighth chapters of the book developed Don's conceptualisation of the artist's role as researcher and communicator. The role of the artist was articulated as one that attempted to break with existing traditions, bringing about artistic innovation. This innovation was then linked to the transformation of perception and perceptual abilities. "To understand the human condition and to communicate a personal vision of the work and new perceptions"

(Foresta 1991b:119, author's translation). The artist's role was clearly equated to the maverick: artists, by the very nature of their role, strove to produce innovation and challenge the status quo. It was in this sense that Don perceived a problem in the art world of television: the exclusion of the artist, not as producer of cultural artefacts, but of the artist as instigator of cultural innovation and change through experimentation with conventions. The constraints brought into play by television's conventions and standards appeared to Don to have limited the degree to which the artist could exercise maverickness. Mondes Multiples represented Don's attempt at extending beyond a dialectical opposition between two art world conventions of media forms into a generalised articulation of the artist's relationship to ICTs.

Although Don alluded to the work of other artists and scientists to support his arguments, they were recruited more as classificatory typologies rather than as allies in a struggle over competing art world participants. Necessarily, by selecting such individuals Don suggested preferences and ideological alliances. But instead of fortifying a position within the video art world in order to increase his standing among its other participants, he extended his reach to include multiple media forms.

For Don, the artist's main conceptual tool is intuition. The artist was presented as an individual who reflected society through his or her creative freedom and tapped into personal subjectivity as a resource for artistic expression. Don's articulation of maverickness depended on the combination of art and science as contrasting yet analogous open-ended, research practices. Paradigmatic worlds of perception and expression were produced by each individual artist through their subjective interpretation of the surrounding environment. The maverickness of the artist instigated a kind of perpetual seeking out of experimentation fuelled by technology:

"Technology creates tools for a specific purpose which responds to specific demands. The artist invents other functions for these tools, taking them beyond their initial purpose and, in doing so, make the technology progress. He socialises the machines and technologies by attributing to them an aesthetic role that in some cases requires some ameliorations and changes to which the engineer must respond. This has often taken place in the field of electronics. Artists that I have spent time with have gone through three successive creative phases which will be repeated in all future technological innovations to come. First of all, they introduce themselves into the technology by playing with it. This is seemingly the best way to overcome the intimidation brought on by the technology's complexity. Then, through experimentation and production, they master the technology. As of that point, they have passed onto inventing and collaborating in the development of new systems to respond to their creative needs.

[...] At this stage, the artist accomplishes a part of his duty to society as researcher by inte-grating a certain vision of technological systems into the human environment. These tech-nologies are no longer passive tools at the service of predetermined human needs but be-come a part of an active system evolving in step with humanity that is subsequently an in-tegral part of human culture." (Foresta 1991b:130-132, author's translation)

This extensive quote, at the end of the seventh chapter of Mondes Multiples, summarised Don's assertion for how the artist should conduct a relationship with ICTs[123]. The three stages of the relation progressively shifted from a stage wherein the artist assumed the role of the user of technology to one where the artist assumed a designer role. The user role was not negated. Instead, it was presented as the embryonic stage from which the artist could grow to master a technology and, subsequently, take on the designer role. Don prescribed artistic conduct as a process of developing mastery over the tools used - a mastery typified by the abil-ity to modify the tool itself. The artist was regarded as being imbued with the capacity, even duty, to contest established conventions. This contention would, in turn, produce a new monde as a result of the artist's creative vision. The clearest representation of this double role was manifested in Don's reading of Marcel Duchamp's Trois Stoppages-Étalons - French for "three standard meters".

"In 1913, Marcel Duchamp reprised the idea of man in a simple yet pertinent way in his work « Trois Stoppages Étalons ». It consisted of a series of works he created by letting a number of meter-long strings fall from the height of one meter. He preserved the results of this experiment by producing new wooden meters whose edge reproduced the shape cre-ated by the falling thread. By constructing new standard meters, he manifested the exis-tence of numerous ways of measuring the world and the fact that each of us, in our way, is a measure of man – a standard meter. The subjectivity of perception furnishes each indi-vidual with his own measure of the world. Communicating these diverse measures defines reality. Like the artist, we constantly create our own vision of the world. We, however, are often oblivious to the degree of this subjectivity." (Foresta 1991b: 106, author's translation)

Central in this account is the artist's unencumbered ability to produce new standards for measuring[124]. Don's interpretation of Duchamp's representation of the individual as a meas-ure of worlds provided an insight into how Don used the artist's capability to conduct maver-ickness to measure a media form's worth as an art world convention. Applying this line of ar-gumentation to an example: by denying the artist a central role in defining/contesting the

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[123] The three stages reappear in the Council of Europe report (Foresta et al. 1995).

[124] Duchamp's artwork later functioned as the inspiration for the iconography of the MARCEL Network's web-site (see chapter 6).

conventions of television as a media form, television art world actors remained oblivious to its potential.

Subsequent academic work and publicly funded research led Don to refine his theories even further. A text produced for Revue d'Esthétique with the help of Alain Mergier (Foresta and Mergier 1994) and later an extended study for the Council of Europe with Alain Mergier and Bernhard Serexhe (Foresta et al. 1995) provided insight into Don's progression from his conceptualisation of Mondes elaborated in Mondes Multiples to that of a communication space. Here, the analogy of space was extended to the point of describing "a new geometry" for communication between multiple actors using digital information communication technologies.

It was via this metaphorical use of space to describe ICTs that I would argue that Don articulated a particular moral and aesthetic conduct of maverickness as a relationship between the artist and ICTs as a media form that I will refer to as squatting. Don made no use of the term squatting in any of the written work analysed in this chapter other than in passing in an interview in 2007 (Tiffon 2007). But over the course of the participant observation, I witnessed him make use of the term repeatedly including at the MARCEL Managers' Meeting (see section 5.2). He used the term to describe a kind of "pre-emptive appropriation" of the network as a communication space. For Don, the lesson to be learned from video art and similar cases of media forms appropriated for the production of artworks throughout history was that appropriation had to take place in the early stages of the ICT's development, before the media form could be constrained by other social forces into established conventions and/or standards that constrained the artist. By engaging at an early stage with engineers and commercial partners that would develop these ICTs, he hoped to design a flexible ICT, thereby ensuring a place for the artist's maverickness.

5.7 Building a Space: Souillac and MARCEL

After his decision to "stop being an artist", Don directed his efforts towards political and economic means of developing a permanent high bandwidth network informed by his articulation of the media form of online digital networks as a communication space and a fundamental privileging of the artist as agent of change. Don's professional frustration with the contingency of networked installations and his theories of squatting came to coalesce in the mid-1990s. With this merging came the identification of a permanent broadband network in the style of a laboratory space. The most significant step towards achieving such a goal was his contribution to the organisation of the Souillac Conferences in Souillac, France and the eventual publication of the Souillac Charter for Art and Industry.

5.7.1 Souillac Meetings

The idea for the first Souillac meeting took shape during a conference in London organised by Jonathan Barton at the LSE's Information Society Observatory in December of 1996. The meeting was arranged by Don, Fernando Lagrana for the International Telecommunication Union (ITU) and Jonathan Barton from the LSE, with the support of the city of Souillac and the Midi-Pyrénées regional authority, for July 1997. In all, 20 participants from nine different countries attended. This included representatives of arts organisations such as V2 of Rotterdam and MIDE in Cuenca, representatives of the European Commission in Brussels and the ITU in Geneva. The meeting was presented as an opportunity to propose a "dialogue between artists and the telecommunications industry, with the involvement of governments and international organisations, on the importance of artistic creativity and the new forms of expression available through advances in telecommunications" (Foresta and Barton 1998: 226). The resulting charter presented the artist as an "advanced user" – a kind of resource for experimentation with ICTs. Arguably, the charter's principle objective was to articulate and disseminate the notion of the artist as maverick user – as an agent of technological and cultural innovation:

"The artist pushes to extremes the communication tools chosen, inventing new tools in the process. The sum of artistic production in a particular medium usually makes statements about the direction that medium is taking, but industry has often been unaware that this type of artistic exploration has led to much invention in both content and hardware in the use of the new tools."(Foresta and Barton 1998:226)

For some, like the art historian and curator, Julian Stallabrass, the Souillac Charter for Art and Industry was symptomatic of an online culture "governed by the various diluted forms of Western European social democracy" (Stallabrass 2003: 78). Stallabrass argued that it represented a further "technocratisation" and "instrumentalisation" of art tied to corporate interests. But his critique also underlined the similarity between his reasoning and Don's argument for the centrality of artistic agency in the appropriation of ICTs. Stallabrass's suspicion of commercial and political interests was tied to individual artistic freedom and of constraints on the openness available to the artist. Nevertheless, given Don's suspicion of and frustration with television, one must acknowledge Stallabrass's argument if only because such a joint attempt to gain corporate support seemed to contradict Don's own suspicions towards corporate involvement in the arts. Over the course of the research I was given two justifications for the Souillac Charter that, with the benefit of hindsight, made it fit into Don's career.

Firstly, the charter was a product of its time. Still in the throes of the Internet Bubble and with successful collaborations under their belt, its instigators and the other participants of the first

Souillac meetings were testing the waters for a more explicit engagement on the part of industrial partners for artistic experimentation. Companies like France Télécom had been significant contributors to such works since as far back as the Venice Biennale of 1986. In an interview with Georges-Albert Kisfaludi, he suggested how much of his and Don's early work had been possible because of commercial sponsorships. They could both recall working with engineers from research labs. Both believed the latter saw in such collaborations the opportunity to promote new technologies. They also believed that these collaborations had been possible because experimental ICTs served little or no commercial application at the time. As Georges-Albert suggests, while recounting his and Don's time collaborating with Créanet, a research arm of France Télécom:

> *"So what was pretty amusing was that we were confronted with engineers who had all sorts of technical gadgets, technical discoveries, and they didn't know what to do with them. They had developed these things, these intelligent communicating objects. So you have a badge, I have a badge. If we're in empathy because our heart rates are similar, our breathing or our heart rate accelerate – because we see a woman – then a light goes on or something like that."[125] (Georges-Albert Kisfaludi, 30 January 2008, author's translation)*

But Georges-Albert specified that, at the time, his and Don's suggestions seemed to fall on deaf ears. One of the conclusions they drew from these experiences was that they needed to influence those administrators who would evaluate the worth of these exchanges. Additionally, such collaboration was necessary in the eyes of Georges-Albert and Don because of the high cost of hardware and connections at the time, not to mention the level of sophisticated expertise needed to set up the connections themselves. The Souillac Charter served to publicize previous industrial/artistic exchanges such as Créanet as a working practice for other interested parties (see Chapter 6).

Secondly, the Souillac Charter represented the artist as an "advanced user" – one who made more demanding and complex use of technologies – and an unrestricted free agent embarking on a research programme. It stated that such a programme could not be pre-determined nor even be influenced by commercial or government interests. These institutions could only provide support in the hope of one day reaping the benefits of the artist's advanced experimental practice – hardly an instrumentalisation. For the Souillac Charter's signatories, collaboration with government and industry was not a threat as long as artistic research and the artist's individual freedom to experiment did not come under fire:

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[125] The interview with Georges-Albert Kisfaludi was conducted in French in a bookstore in Paris, France on the 30 January 2008.

"The artist can provide innovation in the process of creating relevant and useful communication tools through experimentation in a wide variety of directions without any immediate practical application. This process brings about diversity in systems, equipment and applications from processes usually intended for one purpose, and dramatically demonstrates other potentials (and limitations)." (Foresta and Barton 1998: 227)

Some, like Fernando Lagraña of the ITU, expressed how they felt that it was this uncompromising aspect of the charter that made it more difficult for industrial partners to implement its declarations as some form of collaboration. Subsequent Souillac meetings addressed more pointed artistic interests (see chapter 6 for a more detailed account) such as discussions surrounding an artist's online rights and the relevance of concepts such as "authorship, originality, artistic appropriation, ownership and public interest with the context of new working practices"[126]. Artistic agency did not come into conflict with such an examination of legal or policy frameworks concerning online authorship. In fact much of its implicit focus was arguably towards strengthening the artist's individual subjective agency online – exploring options for a less restricted flow of intellectual property while ensuring that artists were able to make a living from their labour. Don continued to use the Souillac meetings to refine his own conceptualisation of the artist's role in his teaching and in his participation in the MARCEL Network.

5.7.2 Coordinating the MARCEL Network: National Studio of Contemporary Art in Le Fresnoy

To date, Don's career was developed in a way that involved the prescription of maverickness and its articulation as a relationship between artists and ICTs through different work practices such as teaching, curating, writing, and producing artworks. But maverickness was not some external, intangible force guiding his work from the outside. A closer look at his career suggests that Don was able to fashion his own brand of maverickness which he occasionally referred to as "squatting". This type of maverickness was developed over the course of his career as a means of establishing an artist's working relationship with media forms as communication spaces. The following section details his efforts to squat high bandwidth academic networks as a space for artistic practice.

In October of 1999, Don began work at Le Fresnoy, a national studio for contemporary arts in the city of Tourcoing in northern France. Le Fresnoy functioned as both a production studio and graduate school for artists working within art worlds such as film, photography and those relating to digital ICTs. Part of the studio's cachet, as its Director Alain Fleischer claimed,

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[126] See Annex 1: MARCEL Archive 00125 - Souillac Group (2000). Authorship in the New Communication Space. Souillac, France: Souillac Group, p. 3.

was that unlike most art schools in France, its faculty was composed entirely of visiting teachers who worked there for a maximum of two years. In exchange for their work at Le Fresnoy, the visiting teachers received support from the studio staff and students to produce a project of their own choosing. Fleischer was familiar with Don's early work at the ENSAD and his work using SSTV; having been one of the artists who worked closely with him at the Paris Biennale, and on the Art en Réseau project. According to Fleisher, Don had not been invited to teach there as an artist because he did not produce artworks. Nevertheless, Don had demonstrated a sufficient amount of intuition about the artist's role in relation to ICTs that Fleischer hoped Don would help the studio develop the new possibilities of digital networks as a media form for artistic work. The two agreed that, despite not being an artist, Don would nevertheless "produce something"[127] (Alain Fleischer, 12 February 2007) during his stay.

Don's initial objective while working at Le Fresnoy was to begin construction of a permanent broadband network space. But this installation was complicated by two circumstances: the first was that the school was not equipped for high speed Internet connections. Because of the way RENATER, the academic network in France, had been designed, Art Schools such as Le Fresnoy did not have direct access to high speed connections (Jaume-Rajaonia et al 2003: 103-123). This meant that Don and his collaborators, including Georges-Albert Kisfaludi, spent a considerable amount of time and effort convincing the proper technical and administrative representatives to get connected, some of whom "dragged their feet" on the matter. Over his two years there, Don eventually managed to secure a room in Le Fresnoy for the connection:

"They emptied out a store room for me. We built walls and I had a space that was ten meters long and five meters wide. The end of the space was a screen with a rear projector. The back of the... The entrance of the space was a black curtain that we used to hide the equipment so that we had just visually empty space that theoretically was prolonged in the other space." (Don Foresta, 1 May 2007)

The second difficulty for Don was that he would only be present as a member of the faculty for a maximum of two years. His eventual departure meant that he could not personally ensure the space's online and offline 'permanence':

[...] I left because my two years were up and I went back there for an event that we had planned to inaugurate [the space]. Which we did, again, with Luc Martinez, Georges-Albert and myself and students from Le Fresnoy. And it was quite a successful event and I realised that they had locked my space up. They had locked it up with all of the equip-

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[127] The interview with Alain Fleischer was conducted in his office at the National Studio of Contemporary Art in Le Fresnoy, France on 12 February 2007.

ment in it besides. Which is completely idiotic. And I said to Fleisher: "Why don't you at least give the key to some students so they can do it?" (Don Foresta, 1 May 2007)

One of the students who gained access to the rooms was Slavica Cerpovick of Ryerson University in Canada who would eventually use the room to produce Melt (see chapter 4). It was during Don's stay at Le Fresnoy that, over time, the projects developed at the Souillac meetings came to be known under the banner of the MARCEL Network. While the technical and administrative challenges for the high bandwidth connection were being resolved, Don, his collaborator Gabriella Kardos, and other artists and students began the work on designing the MARCEL website (see chapter 6 for a more in-depth study of this work). The work at Le Fresnoy, with the support of students there, laid the groundwork for MARCEL. By the time his two years there came to an end in the summer of 2001, Don had already been accepted as an visiting researcher at the Wimbledon School of Art in the United Kingdom.

5.7.3 Coordinating the MARCEL Network: Wimbledon School of Art

On 1 October 2000, Don was awarded a three-year Arts and Humanities Research Board (AHRB, later renamed the Arts and Humanities Research Council or AHRC) "Fellowship in the Creative and Performing Arts" through the Wimbledon School of Art[128] Research Centre for the following academic year. The fellowship's proposal, "Artistic Exploration of High Band-Width Networks", had been developed with the help of the School in order to continue to develop the work initiated at Le Fresnoy. Over the course of the fellowship, Don would have to file a number of reports to the AHRB in which he indicated his aims and objectives":

"The research programme's objective is to integrate the performing arts into the interactive virtual space provided by high band-width networks (beyond internet), to develop and encourage the synthesis of the performing and plastic arts in interactive practice, to explore cross-disciplinary approaches in both artistic and technical fields, and to assure the presence of artistic experimentation and cultural content in the developing communication systems."[129]

It was during his time at Wimbledon that, for Don, the MARCEL Network took shape:

[...] "MARCEL actually started in 2001 in December with that first connection between Ryerson and Wimbledon, and by that time we had already made the decision for piggybacking the academic network, working through institutions, and using the Access Grid

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[128] Later renamed the Wimbledon College of Art, see below.

[129] See annex 1: MARCEL Archive 00104 – Foresta, D. (2003). AHRB End of Project Report. Wimbledon School of Art, Wimbledon, p.3.

platform. Those decisions had already been made as the only way that we could, as practicing artists, have access to the kind of bandwidth that would make sense." (Don Foresta, 22 June 2007)

Because this was the period during which a connection between Ryerson and Wimbledon using Access Grid was first tested, Don classified it in our interview as the moment of the network's birth. In spite of the other early work on the website, the high bandwidth connection qualified as the basic requirement for the network's existence. Most of the connections were initiated between the Wimbledon School of Art in London, United Kingdom, Ryerson University in Toronto, Canada, and Le Fresnoy, near Lille in France. As described in chapter 4, Don and his collaborators were able to secure a location in the School's Research Centre from which to establish the events' connections. By September 2002, thanks to a European Commission grant related to the ALTERNE project (see below) Don had recruited an independent research support team at the School. The team consisted of Gabriela Kardos as ALTERNE coordinator (whom he had worked with at Le Fresnoy on the MARCEL website), Grzesiek Sedek as Network Manager, and Briony Pope (later Briony Marshall) as MARCEL Manager. The three members of the team were initially contracted to work at the School two days a week for a year[130]. At this point, according to available documents (see methodology chapter), a campaign for promoting Access Grid and high bandwidth inside Wimbledon ensued. A number of events, presentations, and workshops were planned for staff and students in the hope that some would develop an interest in using Access Grid for their work. Throughout these activities, MARCEL was presented to the School as a network for experimental collaboration in a way that was consistent with Don's view of how an artist should conduct his or her relationship to technology:

"For MARCEL, the network has a major role in the creative process: partners engage in collaborative projects over the high-bandwidth network. Here the network itself becomes a communication space and, at the same time, a technological tool for artistic creation. This constitutes a significant difference from the other artistic/technological networks that are basically networks for information exchange only. In the past, artists have come to new communication spaces (such as television) only after their inception. Today, with the arrival of the high-bandwidth network in educational institutions artists can be in that communication space right from the very beginning of its usage and thus help define it before its content becomes fully commercialised."[131]

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[130] At the point when I met Grzesiek in October 2005 in section 4.4.1, he had been hired on by the School in a contract unrelated to MARCEL.

[131] See annex 1: MARCEL Archive 00111– Kardos, G. (2002). MARCEL and ALTERNE. Wimbledon School of Art, Wimbledon, p.3.

This brief passage in a document circulated within the School effectively summarized Don's own combination of artistic agency and communication spaces into the practice of squatting. But activity was not only limited to promoting Access Grids use by the School. In tandem with the AHRB research grant, Don and the team also participated in a parallel consortium known as Alternative Realities in Networked Environments or ALTERNE that included a number of other partners from six different organisations across the United Kingdom, France, Belgium and the Czech Republic. As part of the consortium's activities, the group worked with Mathias Fuchs of the University of Salford on a project referred to as Multiple Viewpoint Telepresence or as the Virtual Faculty/Global Threads project. The overall objective of the project was to generate an online space in which well-established scientists and artists were invited to contribute to a "virtual faculty": a multi-media environment wherein the arts and sciences could find common ground. The specific technical objective of the project involved designing such a virtual space over the high-bandwidth network using a combination of Access Grid, Pure Data, and a version of the Unreal Tournament gaming engine in order "to create a platform for online presentations of speakers and materials supporting the speaker"[132]. A pilot version of the platform based on the work of Jean-Claude Risset was presented on 11 November 2004 at the SC Global Conference in Pittsburg (see image 2.5 in annex 2).

The result of the project was arguably an even more explicit design of the communication space. Instead of the "windows" style video signals streamed within distinct virtual venues as designed for the Access Grid platform (see chapter 4), the user created an avatar that walked from virtual room to virtual room to view and manipulate information. The project remained consistent with Don's conceptualisation of the three phases of an artist's work with ICTs as presented in Mondes Multiples: by creating a new platform, the team was no longer "playing" with the technology, it had moved on to mastering it and designing new applications for its users. But the team also identified a number of issues related to the project, particularly pertaining to the dissemination of this new platform to new users:

"In general, all the projects in ALTERNE operate in a complex technical environment which limits their use in other areas and over other support structures. The experimentation and production was on a very high level but confined to two virtual spaces, that of the SAS Cube, which required the set-up existing only in Laval and that of the high bandwidth network, at this point historically, limited to the academic networks of member countries. This will undoubtedly change in the future and the work done will be more accessible to a wider and wider public as bandwidth grows and the various teams move into other potential presentation spaces."[133]

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[132] See Online research documents: Alterne (2005)

[133] See Online research documents: Sedek (2005)

Another limitation for its distribution was due to the high cost of using proprietary software such as the Unreal Tournament gaming engine as part of the design (Access Grid and Pure Data, being open source, did not pose such constraints). These restrictions, combined with the limited timeframe, meant that little of the project moved beyond the experimental stage as in many of the projects presented in chapter 4. Similarly, the team's promotion of high bandwidth and Access Grid to staff and students at the School met with mixed results. Based on documentation from the period as well as interviews with the team members and School representatives, three hurdles at the School stood in the way of the team's successful promotion of Access Grid:

1) Rumours at the time were circulating among staff that the School would eventually be integrated into the University of the Arts London. Because of this, the future of the School's programmes, including the Research Centre and its related infrastructure, were perceived by members of the team to be uncertain. The team related an impression that few in the School were willing to commit to an ambitious and unfamiliar project before these institutional uncertainties were resolved.[134]

2) The team began implementing its promotional projects in the latter part of the first academic term of 2002 after having set up their offices in the Research Centre. By this time, most of the faculty had difficulty integrating the projects into their curriculum. Similarly, research projects conducted by graduate students were already well under way, leaving little opportunity to explore possible research projects with these students.

3) The team encountered a number of technical challenges for coordinating the design and use of the relatively expensive resources needed for working with AG. As described in chapter 6, acquiring and keeping track of cameras, laptops and other technical gear as well as securing them for the team two days a week required a good deal of planning and "running around". More broadly, the team faced resistance on the part of the School's Information Technologies (IT) department. Documents available (and confirmed by interviews with the team and some administrative staff) suggest that representatives of the IT department were reticent to allowing members of the team to modify network security parameters and bandwidth settings. In one instance, an online event was cut off in mid-production because of disagreements between the team and IT staff.

The characteristics of these hurdles had similarities with the issues of organisational distance and flexibility for artists' design and use of Access Grid developed in chapter 4. By the end of the 2003-2004 academic year, most of the MARCEL projects at the Wimbledon School of

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[134] In 2006, "the Wimbledon School of Arts joined the University of the Arts London and renamed to Wimbledon College of Art" See Online research documents: Wimbledon College of Art (2007)

Art had ceased save for an occasional connection initiated by Grzesiek (see chapter 4). Don would not continue to work with the School despite their continuing status as a MARCEL Node Manager until March 2006.

In the end, Don maintained limited contact with both Le Fresnoy and Wimbledon after leaving, making it difficult for him to oversee the building of interest in activities with Access Grid there. In the case of Le Fresnoy, Access Grid use, as with any technology according to its director, was evaluated more on a case by case basis relating to the students' needs for producing their individual projects. In the case of Wimbledon, Grzesiek remained on staff at Wimbledon, mostly working on non-Access Grid related contracts and maintaining the MARCEL website until its move to the University of Maine (see chapter 6). The work at both Schools represented one of Don's opportunities to conduct his own version of maverickness that he had developed over the course of his career. In this case, such a conduct was specifically directed towards the mediation of Access Grid and high bandwidth. Despite this opportunity, a good deal of the work seemed to focus on Access Grid's promotion as a media form rather than on exclusively contesting or developing new standards/conventions. Maverickness depended on an explicit distance between the artist and the organisation. While some teaching work provided stable income.

I met Don for our third interview in his personal office in his flat in a Parisian suburb. In the middle of the carpeted room with large windows and book shelves along its walls was a desk with an Apple desktop computer from where he now conducted most of his work as the MARCEL coordinator. It was interesting for me to see the room from where he and I had had more than a few Skype videoconferences. Although retired, he spent much of his time traveling and in meetings. His retirement, he explained, provided him with an allowance for time and mobility for coordinating MARCEL, resources that he felt were not so easily available to other participants in the network who were swamped with the "regular" work of their employers. But these opportunities were also made possible through his institutional connections with invitations to colloquia and conferences to speak, along with travel and project grants, acting as a means of meeting new people and the possibility of arranging meetings to stay in touch with existing MARCEL members. His reputation as a networker was not idly won. Inexpensive and relatively short transatlantic flights made it possible for him to stay in face-to-face contact with connections in North America. Trips to Canada or the United States were often extended to three or four city tours of university campuses, arts organisations as well as friends and family. In conversations during the field work and in interviews, he often stated something along the lines of "I'm not going to do this forever" but nor did there seem to be an end point in sight. The contingency of access to place and commitment from the institutions tended to limit Don's commitments. But similarly, MARCEL itself, as we will see in

the following chapter, followed him through these displacements. The contingent nature of work in organisations such as the ones Don encountered involved understanding that one's position is not fixed nor will one necessarily leave a trace behind. When I asked about whether or not the MARCEL network could function without him, he insisted that it should. His choice of title – MARCEL coordinator – was, he explained, a reflection of his desire to avoid "taking ownership" of the network.

5.8 Maverickness within the art world network

This section turns to a deeper thematic analysis of the documents and interviews involving non-artists and other artists working with the art world network to determine to what extent maverickness was shared among them. What is clear is that Don's role within the MARCEL Network was significant and that a description of the network is incomplete without a deeper understanding of his views. As Professor Owen Smith, one of the MARCEL managers and director of the New Media program at the University of Maine, put it in an interview:

"We've worked with Don certainly as our kind of primary contact. And, you know, I think a lot of us are responding to Don, frankly. To who he is as a person and his vision and his long-term interest and engagement, not only in the network and high bandwidth but in the specific realisation of MARCEL. And I think we understand his vision, and we agree with it and we want to help him see that come to fruition, frankly."

[...] I think on more on a functional, sort of day-to-day level, I don't really think of it specifically viewed through Don's vision. But, you know, during meetings or thinking more broadly about what should MARCEL do, or what can it become, or how might it be used, I do tend to go back to, you know, Don's ideas and – not that it all has to return to that but, you know, I see them as being aware of a certain knowledge of art and technology and art and science. That is, he's a useful touchstone to think about, you know, 'where is it going?' and 'where might it go now?' and those different sorts of things."[135] (Owen Smith, 23 April 2007)

Of the nine non-artist actors interviewed over the course of the case study, five expressed categorisations of the artists' work as either technologically prescient and/or technically unconventional. In the former category, the artist had the ability to anticipate future technological developments:

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[135] The interview with Owen Smith was conducted in his office at the University of Maine in Orono, United States on 23 April 2007.

"And the artist as well, you know, traditionally we see the artist as someone who antici-pates society's next steps or at least can really synthesise what's going on in society and in a new way, and a new take on what's going on. And often it can be rather humorous or you know, really, you know, dramatic. [laughs] "[136]*(Jonathan Barton, 29 January 2008)*

This category matched well with Don's own articulation of squatting in that it depended on the intuitive identification of future ICT standards. The artist in this category was to some extent compelled to predict and/or produce new social or technological developments. In the latter category, the artist was classified as having expertise from another social (art) world. These abilities were perceived to be productively deployed when integrated into a collabora-tive process of ICT experimentation:

"One of the things that I thought artists were doing that was very interesting was accept-ing the fact that these networks were imperfect, they introduced delay, they introduced jitter, there was a possibility of breakdown in communication. This is part of the artistic process. But artists are trained to do that, scientists are not." (John Brooke, 5 March 2007)

"And it's amazing really because you don't even think... you don't even think that you're doing things in a certain way. You know, you just think: "I'm doing what I want." You know. [...] So that's the job of an artist probably, isn't it? To break things up and to make you look at things in a different way. And that's what she did. She just came in and said: "Let's get rid of that, let's get rid of that, let's change that, let's change that, it's far more interesting if it does that. Can I put video in?" (Mike Daw, 5 March 2007)

The two quotes above, arguably represent an outsider's perspective on maverickness: that is of the artist "being" unconventional. The artist was valued in the process of experimentation because of how her expertise contrasted with the scientific expertise or user habits of other participants. In either case, maverickness was not articulated as a constraint or hindrance to experimentation but as a positive resource, one that could be harnessed for technological in-novation. Nevertheless, some respondents did qualify their answers, specifying limits to the extent to which maverickness could be taken before it became an impediment to collabora-tion.

Based on my encounters with artists over the course of the research, Don was not alone in ar-ticulating a dialectical relationship between two or more art worlds. Other artists expressed

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[136] The interview with Jonathan Barton was conducted in his flat in Paris, France on 29 January 2008.

similar arrangements. As Ruth Catlow from Furtherfield explained in one of the Independents meetings (see chapter 6), the arts group established itself in opposition to the Brit Art movement of the early 1990s:

"We kind of grew up just as Brit Art was really taking off. And this, for us, provided a rather kind of smothering culture. And we kind of got started because we wanted to share our enthusiasm for works that we thought were really interesting and that deserved a platform and that deserved to be seen and to be talked about that kind of couldn't break through this very kind of star – celebrity based kind of culture that was kind of springing up in a fairly horrible way in our view."[137]

Just as in Don's dialectical construction of television and video art worlds, the artist represented an opposing art world that served as a means of providing references for her work. Other artists and directors of art departments expressed an identification with canonical figures such as Marcel Duchamp and Nam June Paik that suggested an affinity to Don's understanding of art. Nor was Don alone in facing the early challenges of getting connected. Kelli Dipple expressed similar challenges for getting online in the mid and late 1990s. Because of this, she agreed to some extent with the importance of collaborating with other disciplines. She also presented similar instrumental arguments for the value she could bring to such collaborations:

"And it was these things that I noticed [about AG] that I think [the director] went: "Ok, that's really relevant and interesting, and valuable to what we're trying to do." Because he wasn't looking at it from quite the same perspective as the scientists were using it. He was looking at it in terms of development and computer science research and how to improve the technology." (Kelli Dipple, 11 May 2007)

In the case of the artists encountered, many expressed their relationship to technologies as a complex one. Although, as in the quote above, maverickness was in some cases a resource, providing the ability to question standards relating to the design and use of ICTs or to be leveraged into access to organisations or other resources, work over time with ICTs also represented a strategic and, arguably, an emotional investment. Conventions relating to the design and use of ICTs were not so easily taken up or discarded (see also chapter 6). As with ICTs, some artists expressed the need for organisational support from other art world actors, that is, those who could ensure that the artist maintained organisational distance from his or her engagements with the spaces that were engaged.

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[137] See Online research documents: Catlow (2007)

Of course there's larger politics. [...] I don't know, I think you've got to transcend that: all those issues to actually get to the real reason why you're doing it. And I think, you know, that a good curator will take those... The artist's issues and concerns on board before they start. And I certainly, myself, see it when it's not going the way it should be going. . (Paul Sermon, 13 July 2007)

Artists working with high bandwidth ICTs deployed similar arguments to Don's view that early experimentations with AG or similar media forms held the promise of discovering ways in which artists could appropriate high bandwidth academic networks, such as JANET in the United Kingdom and Internet2 in the United States, in order to produce artworks. Jon Ippolito, one of the members of MARCEL from the University of Maine, stated in a posting on the Nettime mailing list in March of 2005:

"If the "official" Internet2 consortium is a symphony orchestra in tails, the MARCEL network is a makeshift performance troupe. Internet2 has 200 university and corporate sponsors; MARCEL has a motley crew of artsy scientists, network performers, and Jitter jocks. Internet2 uses stable high-bandwidth videoconferencing for the privileged participants and netcast for everyone else; MARCEL uses the rickety Access Grid platform, which permits all users to participate at the same level."[138]

Here was an outline for a maverickness suited to an art world network's design and use of Access Grid. Its extensive ties to academic high bandwidth made it inaccessible to many (see ALTERNE project above and chapter 4) and, therefore, susceptible to accusations of being a reserve of those in the "ivory towers" of academe (see chapter 6 section 6.4). But by squatting these very same academic networks, MARCEL could argue that it contested its design and use by these very same academics. Such a contention could also be categorised within the wider debate around 'net neutrality' (Mansell 2008, Owen 2007, Showcroft 2007) and concerns related to the implementation of IPv6 and how it could affect artists' ability to produce and distribute their work. The contrast between the "symphony orchestra" and the "performance troupe" suggested a choice between a stifling order or efficiency and a grassroots egalitarianism consistent with tactical media movements expounded by the likes of Garcia and Lovink (1997) or Galloway (2004). It was therefore possible for Access Grid to be used by the MARCEL Network as the contention of a standard design and use by academic networks.

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[138] See Online research documents: Ippolito (2005).

5.9 Conclusion

As part of the research, this chapter set out to combine an historical construction and thematic analysis of Don's writings, interviews, and participant observation in order to determine to what extent his articulation of maverickness, as a form of discursive conduct, shaped of the artist's relationship with ICTs.

This thread offers only a very partial narrative of a life and a career. Don Foresta was not an automaton whose single purpose in life was to perform the role of the artist. He is also a father, a husband, a friend and competitor to scores of other individuals. His articulation of the artist role provided only a partial sketch of some of his many needs and desires. The artist role as witnessed in Don's career was not fixed or easily defined. His adherence to the role, as expressed by him and those around him, fluctuated. Simply put, he was constructing a role for the artist even to the extent that he was not necessarily embodying it. It was important to make room for such deviance as it demonstrated the situated and situating nature of roles: at times, individuals chose to dispense with such roles if they feel it is to their benefit. However, a consistency that transcended Don's understanding of the artist's role was its articulation as the conduct of maverickness.

Maverickness may be understood as a mode of conduct that continually struggles to assert artistic freedom through the contention of conventions. Don's particular articulation – squatting – was directed towards media forms and informed by an "acceptance" of the inevitability of technological change and scientific progress. His strategy was to occupy what he identified as emerging communication spaces to ensure the possibility of conducting maverickness on its standards of design and use, thereby shaping new conventions for artistic practice. Its conduct was not only articulated through the production of artworks but extended to multiple forms of work including teaching, writing, discussing.

Re-examined in the light of the previous sections, the encounter related in 4.2 between Don and the MARCEL website managers can be understood in a more nuanced way. At stake in Don's defence of Access Grid is not so much the technology itself but the particular articulation of squatting in relation to the process of experimentation. He expressed the artist's work with high bandwidth academic networks as squatting. Used in this way, squatting carried certain connotations. It was consistent with his spatial analogies employed to describe the network: to squat the network was to occupy the network as a space – and to occupy it in a particular way. The following chapter will now turn to a more in-depth examination of other activities between participants of the MARCEL Network.

Chapter 6

CLASSIFYING THE MARCEL NETWORK

6.1 Introduction

This chapter turns to the collective aspect of artistic work with ICTs in an art world network in order to ask how classification work takes place in the MARCEL Network and, specifically, how Access Grid is classified as a part of its activities. If both ICTs in their appropriation in time and space through a process of experimentation (see chapter 4) and the individual's articulation of the artist's role related to ICTs (chapter 5) are contingent, then in what way does this contingency enable or constrain the collective coordination within an art world network? To answer this question, I need to analyse the type of collective work within an art world network that includes artists, other support personnel such as administrators and technicians, as well as the ICTs they experiment with. In interviews and documents, most of the individuals encountered during this case study either directly, loosely, or not at all linked to the MARCEL network, the term "collaboration" was most commonly used to describe such collective work. The terms that were repeatedly when referring to Access Grid's design and use in the sample literature included examples such as "group-to-group collaborative visualization" (Childers et al. 2000) and "group-oriented collaboration" (Stevens et al. 2004) to name but a few titles of papers. And Don frequently referred to artistic collaborations to describe his work. In both cases, collaboration, like coordination or cooperation, arguably implies an egalitarian sort of work in which representatives from different social worlds who participate in the work are treated as equals. The following section examines this practice and explores what insights a power relations-informed networks perspective (see section 2.4) provides into the construction of a networked art world network.

In this chapter, I argue that implicit (or in some cases, explicit) within collaboration is classification work, specifically the development of a system of classification by artists and their support personnel. In chapter 2, section 2.3.3 classification was defined as constituting part of the work of representing new media standards as art world conventions and vice-versa. Classification, therefore, plays a potentially significant role in enabling or constraining the artist to contest established standards and conventions.

The chapter is subdivided into three main empirical moments: the first consists of Don Foresta's and Georges-Albert Kisfaludi's earlier work of designing networks prior to the formation of the MARCEL Network. In chapter 5, section 5.2 addressed the ways in which Don chose to defend Access Grid because of its usefulness as an experimental platform for occupying high bandwidth academic networks. It demonstrated how the permanent network was part of Don's vision of a permanent "artistic space for creative experimentation". Section 6.2 of this chapter examines this objective in greater detail. Section 6.3 examines the MARCEL website and offers a reflexive analysis of the work that surrounds its design and use, and section 6.4 provides an account of the work of recruiting independent media art centres into the MARCEL Network in the United Kingdom.

6.2 The lists of art world networks

Chapter 5 introduced Don's use networks as an integral part of his artistic practice over the course of his career. Don's past work, including public service, teaching in academia and curating video art, helped him appreciate the importance of social networks. Similarly, an extensive and varied number of media experiences with networked ICTs, digital or otherwise, shaped his understanding of artistic practice. Throughout his career, an extensive list of events and organisations related to networking issues emerged - International Media Exchange, Art en Réseau, Artistes en Réseau, Laboratoire de Langage Électronique, Electronic CAFÉ International, ALTERNE, the Souillac Group, to name but a few – each of these a network with varying ties to individuals and other organisations, projects and technologies. This section will ease into the analysis by returning to some of the research sample data from the previous chapter in order focus on one form of representation of networks: lists encountered in Don Foresta's and Georges-Albert Kisfaludi's work with networks prior to MARCEL.

In Don's case, his career and conduct of maverickness through artist work and elsewhere was arguably already part of a classification project when engaged with video art. This section demonstrates how these lists were produced as both representations of artistic collaboration in the process of experimentation and as arguments for the establishment of conventions for an art world network(s). As indicated in chapter 3, section 3.6.3, the research identified three types of lists: members lists, technical lists, project lists.

6.2.1 Member lists

In the sample 20 membership lists were identified. They offered to the reader a sense of a network through its relevant participants (a list of names, a number of members, etc. – see section 3.6.3). Many of the members lists that made-up the sample resembled the lists used by Diana Crane when constructing art world networks described in The Transformation of the Avant-Garde (Crane 1987:153-158)(see also pages 145-148 for her methodology).

An example of Don's earliest written texts as curator contained an extensive rundown of American video artists and their work. They had been selected for an exhibition at the American Cultural Centre called "Video Art from America". As the exhibition's curator, Don made the case for their relevance, explaining the value of each of their works and articulating a relationship that tied them together as an art world network. This relationship was defined as American artists who experimented with the artistic possibilities of video as an art world media form. This was part of Don's work in contributing to the construction and classification of the video art world examined in chapter 5.

A later 1985 article on the video department at ENSAD presented a list that included Don and a group of video art students. At this point, networked activity was represented in a more 'collaborative' way, emphasising working relationships between members. In this case, the article described their collective work as informally structured in which two or three students shared the different tasks involved in producing video art. The article also suggested that the network had a name: Maitres du Monde (literally Masters of the World a name that may have tied in to Don's book, Mondes Multiples, in 1991).

Subsequently, there was a discernible shift in the articles from the time Don and Georges-Albert moved to La Villette in 1991 (see section 5.7 for an historical timeline), from relating instances of experimental connections as, for example, was the case with the Café Electronic in the late 1980s to the portrayal of a formally established and sustained experimental online network through member lists. In 10 of the articles describing the networks, particularly articles about Artistes en Réseau from 1990 until 1995, lists of network members were particularly prevalent. The lists did not consistently refer to specific members and in most cases only referred to particular cities or countries. French participants such as Lyon, Nantes (where Georges-Albert Kisfaludi became a teacher at the École des Beaux Arts de Nantes), and Poitiers figured prominently. The lists also included international locations. Among the names of countries and cities were Germany (specifically Cologne and Karlsruhe, though Kassel and Hamburg were each mentioned once in separate instances), Japan (Nagoya was mentioned twice in articles in 1991 and 1992, however, two art schools in Tokyo, Asagaya and Musashino were mentioned in later articles), and the United States (Santa Monica, the original site of the Electronic Café was mentioned in 1991 and 1992, New York was also mentioned three times between 1991 and 1994). Denmark and Switzerland also figured prominently as well as Spain, Canada and the United Kingdom. These lists did not indicate to what extent the different nodes met face-to-face or online. Nor did they specify explicit commitments on the part of the people or places listed. They represented networks as ongoing rather than as series of one-off events thereby arguably implying a level of 'permanence' that would later be explicitly articulated in the MARCEL Network. It also generated a representation of collaboration

between artists and support personnel on an international scale. These aspects of the network would be reinforced in later representations, such as an evaluation of work of Laboratoire du Langage Électronique (which was itself limited to France):

"Created in 1988, [Artistes en Réseau] defines itself as a network between art schools, research centres and independent artists who are united by the goal of creating and communicating via digital information networks. It is an international network that can count on approximately thirty permanent representatives in ten countries." (Deshayes et al. 1998: 98, author's translation)

Other member lists encountered in subsequent documents such as those in the Council of Europe study (Foresta et al. 1995) took on a wider scope, representing an outline of a European-wide media art world rather than a specific networked art world network. In all cases, these member lists arguably functioned in part as representations of the network to potential stakeholders and audiences. Member lists, when combined with technical or project lists (see below), were implicit representations of commitments to the conventions of the network. The lists could also be used as tools for recruitment. Finally, they also provided quantitative (for example, the number of countries involved) and qualitative (for example, the implied distance between connected points) characteristics of the telematic artworks produced by the networked art world networks.

Once MARCEL was up and running, Don assumed the role of its coordinator and by the beginning of the research in 2005, he had assumed the manager role for its Members category (see section 6.3.1 below for greater details about categories). As related in chapter 3, section 3.4, I initially encountered difficulties identifying what constituted membership in MARCEL in the early days of the fieldwork. The members lists on the website did not equate to a formal or legal engagement with MARCEL. At first I expected that the person managing the network's membership held what Castells calls networking power – in a sense, that he or she could include or exclude individuals through membership. But when asked how he selected members, this view seemed far less clear cut:

FL - "So would you say there's a kind of instinctive way of finding members?"

DF - "Yeah, first of all, I don't go out and find members. I let members kind of find me, and it doesn't mean I say yes to everybody, I generally do but what I found over the years, you don't even have to say no, because they just disappear themselves. Because people say 'What do I have to do to be a member? Does it cost anything?' I say 'No, it doesn't cost anything. Being a member is only your telling me you want to be a member and you use it.'" (Don Foresta, 22 June 2007)

Some members signalled their interest, signed up, and only participated in one or two events. In other cases, they did not participate in any events. In participant observations, artists working as part of MARCEL occasionally used the term re-activate to describe how some members who had been inactive for extended periods of time would occasionally reappear to work on a project. In some cases, Don would occasionally attempt to increase commitment on the part of a member:

DF - "And then I'll start prodding them to commit themselves a little bit more to it."

FL - "So what would that kind of commitment consist of?"

DF - "They just start doing something on it. Because I'll say 'What are your plans? What are you gonna do?' And if they come back to me and say 'Well I'd really like to do this thing on interactive dance.' I'll say 'Okay let me put you in touch.'" (Don Foresta, 22 June 2007)

It is partly through this ability to put you in touch that Don cultivated his reputation as Mr. Network (see chapter 4). Other current and former members who actively connected members included Hannah Reddler and Tim Jackson. Thinking of Star and Bowker's illegitimate stranger (Star & Bowker 2000: 295), I asked who could not be a member of the network:

FL - "Who couldn't be a member of the MARCEL?"

DF - "Well, I think there is a defining idea, even though I don't pound on it, that we're really coming from art. And I think if a company, for instance wanted to be a part of MARCEL but didn't give a shit about art, I wouldn't accept them. Daniel Summer is our only industrial member of MARCEL because it—he wants to be involved in art. First of all, he's an ex-art student and considered himself to be an artist, and doesn't do any art, but he'd like to do it again.

[...] I think if Hewlett-Packard came to me and said 'I'm interested in your research and I'll fund this, but we would like your people to do this, this, and this.' I would probably say 'No.' If Hewlett-Packard, which they have done in the past with other people, came and said 'We would like to set up some kind of a program to do research in conjunction with artists.' God, welcome aboard, money or not. So I think that's it. I don't think that's my private vision. I think most people coming into MARCEL have that same idea." (Don Foresta, 22 June 2007)

Underlying the seemingly arbitrary practice of acquiring members presented in the earlier quote, a classificatory system was still applied whereby art functioned as a means of selecting/retaining members. MARCEL members deployed the conceptualisation of art to establish connections with other members in the art world network. (see 6.3.5 section specific to questions of art and industry) To a certain extent, therefore, those who participated in the MARCEL activities applied or were subject to a classificatory system which depended on identifying an individual's relation to art. In this sense, rather than an arbitrary nomenclature (Bowker and Star 2000:12), these membership lists classified collaborative exchanges as art world activity.

6.2.2 Technical lists

Two different kinds of technical lists were identified in the sample: the first type comprised lists of media forms; the second, what I refer to as lists of media conventions. Media form lists were arguably used to compare and relate infrastructure of media forms. For example:

"So-called interactive television, CD-ROM's, video games, only allow interactivity with some pre-designed process, a series of predetermined givens and not with a real human being on the other end." (Foresta et al. 1995: 15)

The particularities of these lists are in most cases left vague or undeveloped. The earliest media convention list encountered in the sample constituted an in-depth description of the video equipment available in the video art department at ENSAD from 1985. In the case of digital information networks, three lists of people, places and/or organisations for networks such as Artistes en Réseau in the primary sample were accompanied by a detailed description of the technology involved in the collaboration. For early digital networks, these lists constituted an important component for collaboration: without a detailed list of what was used between the different nodes, it was next to impossible for an individual or organisation interested in connecting to the network to replicate the network's connection standards.

"The programme invites each art school to acquire a Macintosh SX. A Macintosh Quadra 700 would be even better. You will also require the Timbuktu screen sharing software, the drawing software Photoshop, a QuickImage video graphics card, and a Canon Ion camera able to record pictures on a magnetic support (which enables the direct transfer to the video graphics card). Needless to say, you will also require the necessary equipment to access RNIS, specifically the Planet card." (Artistes en Réseau 1992)

When distributed to other individuals these technical lists became implicit attempts to establish specific minimal technical standards as conventions within the art world network. Al-

though connecting did not equate to collaboration, sharing a minimum set of infrastructural standards such as the right hardware and software was deemed necessary for collaboration.

Later examples of the use of technical lists encountered elsewhere during the field work were the exchange of inventory lists among MARCEL members and support personnel during its activities at the Wimbledon School of Art between 2000 and 2003. Some 20 examples of such lists were identified in the archives. Most of these lists involved taking stock of, or requesting funding for, technologies related to the MARCEL Research Laboratory at the Wimbledon School of Art. A MARCEL Equipment Inventory[139], for example, was circulated among members of the team and the School administrators as a way of taking stock of what technologies were available to the team and what technologies were missing or being used by other School members. Three lists[140] in the sample provided detailed standards for constructing an Access Grid node which were then circulated among project members or the wider MARCEL membership. No specific technical lists were made available on the MARCEL websites (see section 6.3).

Technical lists were not isolated to art world networks. Similar examples of technical lists were encountered in the research were the detailed instructions for standards for designing and using an Access Grid node (AG Website, AG reports, AGSC website – see chapter 4). When used by the MARCEL members, however, these lists were explicitly used to coordinate art world activity by classifying standards as conventions.

6.2.4 Project lists and the Souillac Meetings

Between 1993 and 1994 project lists began to appear in the original sample: lists of activities, objectives or tasks. These lists represented variable and contingent work through collaboration: mostly tied to art education or experimentation as developed in chapter 4. These four lists found over the two year period of field work represented the successful enlistment of collaborators for the punctual production of artworks and highlighted the vacillating permanence and confluence of the networks such as Artistes en Réseau, Arts et Réseau and the CAFÉ Électronique International identified in chapter 5, section 5.5. It was arguably the combination of subsequent project lists (see section 6.3) under the umbrella of the Souillac meetings and its combination with the two previous types of lists that the MARCEL Network could take shape. Although a considerable number of project lists were encountered over the course of this project, the following section focuses on this combination of project lists over time. The

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[139] See annex 1: MARCEL Archive 00027 - Pope, B. (2002). MARCEL Equipment Inventory, Wimbledon School of Art, Wimbledon.

[140] See annex 1: MARCEL Archive 00034, 00035, 00041

section examines the further deployment of all three types of lists in the work leading up to MARCEL's creation.

Based on the previous sets of lists – member lists, technical lists and project lists – it was clear that Don and some of his early collaborators were already reflexively trying to represent an art world network prior to the Souillac meetings. These lists constructed relationships for art world work with ICTs. The first set of meetings that led to the Souillac Charter of 1997 was therefore more of a continuation of existing efforts to create an international art world network of artists, scientists and technicians connected by a permanent high bandwidth digital network. When MARCEL was eventually created, it appeared to replicate many of Don's, Georges-Albert's, and others' early beliefs and values such as the parallel interests of artistic and scientific research and the primacy of artistic creativity in the development of ICTs (see chapter 5).

"So the idea was to say: "Look, let's do something that people can espouse in modular, you know, ways." But that people can take on board and say: "Right, you own this part. Run with it." And just assume that everyone's just grown up enough to know how to implement their own, you know, piece that they said: "I want this. I want to appropriate it for myself because I believe in it and it's close enough to what I'm doing and I think that it's coherent in a whole." So... It was a really kind of philosophy of the network as well where each node interacted pretty nicely with the whole concept, you know. And so that was a way of practically achieving everything without also having a massive budget behind it." (Jonathan Barton, 29 January 2008)

The Souillac Charter included a list of 20 signatories and consisted of an outline for a three-way relationship between artists, industry and governments for the production of experimentation with digital information networks. Some efforts were made to generate a larger members' list over the four years covered by the three Souillac conferences. The publication of "The Souillac Charter for Art and Industry" in the pages of Leonardo (Foresta and Barton 1998) nearly a year after the first Souillac meetings was accompanied by an announcement titled "Souillac Charter: Update". It invited Leonardo readers to provide "names, addresses, E-mail addresses, Web Sites , etc. of individuals relevant to [the Souillac Charter] project" (see Foresta 1998).

The Souillac II meetings in June of 1998 included a number of lists including, in an appendix, a list of "Individuals and Institutions Interested in a High-Bandwidth Network" (Foresta et al. 1999: 206-207) with 27 names from parts of North America and Europe as well as "Interested Industrial Groups" with five interested industrial partners. One could also find lists of relevant websites and budget outlines (Ibid: 207). The participants produced a report listing a

number of projects. The document was subdivided into seven sections each describing a specific project in order to 'build on' the recommendations of the 1997 Souillac Charter:

1) Innovation Exchange Workshops – producing a series of workshops conducted over the span of 1998 and 1999 in parts of the United Kingdom, France, and The Netherlands. Similar events were also forecast for Germany, Spain and Canada.

2) High [Bandwidth] Network for Artistic Experimentation – creating an information network of contacts, resources, and commercial partners able to develop and support a high bandwidth network for media artists and arts organisations. Although the design for the geographical topography of the network spanned "from the US west coast, through the east coast, Canada, across the Atlantic to France, Germany, the UK, the Netherlands and Spain"[141] it also listed a number of criteria for identifying eligible work: "i. technical development and innovation ii. interesting partnerships iii. development of new "languages" in the widest sense iv. be considered a prototype v. be seen in public spaces, i.e. museums, etc. vi. be highly legible – visible vii. be user conscious."[142]

3) The Navihedron (NAVIgation by polyHEDRON) – building an online tool in order to enable individuals to access information about Souillac related activities. It was suggested that the Navihedron, a project initially developed by Roy Stringer and AMAZE in the United Kingdom (see section 6.3.2 below), would support project 2 presented above. The platform would be composed of twelve categories that were defined as: "i. The Souillac Charter for Art and Industry: Aims, Objectives and Related Documents, ii. Interactive Art Network: Members; Institutions, Schools, Laboratories, Artists..., iii. Education: Curricula, Courses, Programmes, Scholarships, iv. Research: Themes and Projects, v. History of Interactive Art, vi. Bibliography, vii. Project Workspace: (entry through project password), viii. Newsletter: Funding, Events, Conferences, Workshops and Meetings, ix. Discussion Groups, x. Public policies: Authors' Rights, Laws, Regulations and Conventions, xi. Contacts with Industry: Projects and Possibilities xii. Technical Information and Development."[143]

4) Artists' Rights in the New Communication Space – initiating a research project examining the changing nature of artists' rights in dealing with digital ICTs.

5) Education: Interactivity and Pedagogical Tools – developing a series of pedagogical resources including an international observatory of online artistic practices, shared pedagogical techniques using ICT networks.

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[141] See Online research documents: Foresta et al. (1999)

[142] See Online research documents: Ibid

[143] See Online research documents: Ibid

6) An International Virtual Faculty on Art and Science – developing a series of online lectures that assembled an 'outstanding' artist and an 'outstanding' scientist to discuss a related topic, thereby contributing a wider 'science/art perspective'.

7) "Instrument Makers", An Exhibit for Building a New Space of the Imagination – the name says it all: producing an art exhibit for gallery or museum spaces that examined the artist's contribution to the development of new technologies and the wider impact on society.

Each of these sections also provided a list of interested individuals and organisations as well as the contact details of designated coordinators for each project. The basic outline of MARCEL's future activities and interests were in place[144]. The network's ambition would be to promote the development and use of a high bandwidth network for artistic purposes. Souillac II constituted a plan of action. It shifted from the generalised cataloguing of the European Commission or the demands of Souillac I to the proposal of concrete directions. The Souillac II Report therefore represented a strategic shift away from attempting to convince commercial interests to support the creation of a high bandwidth network for art towards a focus on academic organisations as potential backers of such an endeavour.

The name MARCEL had not yet been chosen by the end of Souillac II or III. By the third Souillac in June of 2000, four project reports detailed the network members' progress: "High [Bandwidth] Networks: Artistic cultural and educational uses and innovations", "Instrument Makers" – An Exhibition (working title) Building a New Space of the Imagination in the 20th Century", "Authorship in the New Communication Space", "Global Threads: A virtual faculty for art and science. A project of the STArt Group".

Two of the three types of lists developed above were found in the Souillac documents. However, technical lists, specifically lists of media conventions, were mostly absent. To a certain extent, this could be explained by the conferences' overall objective of appropriating a communication space on high bandwidth networks. At such an early stage, it may have been the intention to leave out the details of such a communication space for fear of too much specificity. Such a choice would have been informed by the fluidity of high bandwidth technology at the time and the level of diversity and complexity in designating standards for all interested parties. The initial discussions around potential collaborations were also arguably left broad enough not to be too demanding of interested parties. But as the projects themselves became more concrete and sub-lists of tasks and interested individuals and organisations started to take shape, the entire collection of initiatives was represented as a cohesive whole, namely as

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[144] It should also be noted that the outlines of subsequent projects such as the Global Threads project, the ALTERNE project (see section 5.7.3) and even the wider context of my own research, were all to varying degrees represented in this project list.

the MARCEL Network. The very basic classification work of producing and distributing these lists laid the ground for representing a cohesive art world network.

The following two sections address the MARCEL website as a media object on the World Wide Web as well as a project where many individuals came together to work including myself. Over time, the website became an even more sophisticated and elaborate epistemological project for the network, essentially making mediating the lists into an online formal representation of the art world network.

6.3 The MARCEL Website

The previous examination of the work produced prior to and during the Souillac meetings demonstrated how a classificatory project for classifying an art world network had already significantly developed. One of the objectives that took shape during the Souillac II was the production of a portal site for "Art, Science and Industry" (Foresta et al. 1999). The portal would contain links to documentation related to the network's activities as well as other websites containing information deemed related to the network. Initially, its creators intended to dedicate a significant section of the portal site to the Souillac Charter and its related activities. By the end of the Souillac III meetings, however, the Charter only occupied a subsection of one of its twelve categories. Although it was not the anticipated permanent broadband interactive network to tie together the art world network, it was the first attempt to represent MARCEL online.

6.3.1 Le Fresnoy and the first MARCEL website

In 2000 and 2001, Gabriella Kardos, an artist who worked with new media in London began taking regular trips to Le Fresnoy to work with Don Foresta as well as invited speakers and students from Le Fresnoy in order to design the MARCEL portal site. During four workshops there, they built on the criteria first elaborated in the Souillac II meetings to develop the portal's categories.

The twelve categories for the first MARCEL website were designed based on discussions raised in the Souillac II and III meetings[145] as part of the work conducted at Le Fresnoy (see section 5.7.3) as shown in Table 2:

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[145] As mentioned in section 6.3.2 below, the only category to have significantly changed from the initial list presented in the Souillac II report was the Souillac Charter category. It was replaced by the Art and Science node.

Table 2: List of categories on the MARCEL website

Members	Art and Science	Education
Rights and legislation	Research	Project Workspace
Discussion Groups	Art and Industry	Technical Information
Resources	Electronic Arts	Newsletters

Each of the twelve categories was then subdivided into twelve subcategories (following the navihedron model, see 6.3.2 below). For example, the Research category was subdivided into: "Research projects (with password), Research results, Project proposals, List of laboratories, Research sites, Publication, Project grants, Conferences, Symposiums, Art theory, Epistemology". Each of these subcategories would then be subdivided into 12 third level categories: "List of laboratories" would then be subdivided into "ZKM, Germany, Le Fresnoy, France, MIDE, Spain, V2 Netherlands, Wimbledon School of Art, UK, Super Computer Center, UC-San Diego, USA" [146].

By March 2001, two students working at Le Fresnoy produced a comprehensive 81 page report called the "Dossier des Sites References pour le Site Portail MARCEL"[147] which initially surveyed 157 websites related to new media art. The report focused on three categories – Project Workspace, Technical Information, Newsletters – and how they would be used to classify the aforementioned websites. The two students generated a referencing template through which they evaluated each site. The template included five classification axes:

1) Basic information about the site – name, country of origin, etc.,

2) Which of the three MARCEL categories and subcategories would they fit under (could include more than one),

3) A description of the information available on the site (factual or documentation), modes of presentation (text, text and images, multimedia), type of access to the site (restricted or unrestricted) and the language used on the site (French, English or Other)

4) A "yes or no" rating of each site's navigation based on a set of criteria such as "external links", "ease of navigation", and "information organisation",

5) A brief summary of the site and the organisation hosting it.

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[146] See Online research documents: MARCEL Network (2004c) Don Foresta (26 June 2001) MARCEL Multimedia Art Research Centres and Electronic Laboratories

[147] See annex 1: MARCEL Archive 00003

Of the initial 157 sites referenced, the team retained a total of 57 organisations under the three categories. Of these, 26 organisations were based in France, nine in the United States, six in the United Kingdom, four in both Canada and Germany, as well as three in Australia, two in Switzerland and in Spain and finally one in Austria. In total, 13 URLs were identified for the Project Workspace category, 24 URLs for the Technical Information category and 93 URLs for the Newsletter category. All 130 separate URLs were then classified under specific sub-categories.

In an interview, one of the students who had worked on this part of the project described it as the basic structural work of MARCEL:

> *"It's like a filing system in a library. How would you give proximity to these elements in a time and place and ensure that it will be useful to someone at some point? So our participation in the Souillac [III] discussions were more along those lines. There were working groups. Some were concerned with archiving, others with more technical questions, still others dealt more with online networking between artists and scientists and what were the... The subcategories within scientific research that would be of interest to artists – things they would share together."[148] (Christl Lidl, 12 February 2007, Authors translation)*

The work of classifying all of these sites was an art world network classification in which sites were either included or excluded as part of MARCEL's representation of media art. But it was also the initiation of the MARCEL website classification work as a programme, in the sense used by Castells (Forthcoming), in that it constituted a systematic activity and an integral part of MARCEL's existence as an art world network. As the subsequent sections demonstrate, the work of meeting, discussing, and designing, the website was one of MARCEL's most significant activities.

An HTML page on the first site indicated a list of MARCEL Members: 84 "confirmed Institutions and individuals" with most organisations - Universities, Art Schools, Media Labs - located in Europe and North America but including one interested partner from Australia, Taiwan, four artists from "elsewhere", as well as Nascent Form (creators of the Navihedron), Verizon and Telefonica as "interested industrial groups". As part of the list, institutions who were using the Access Grid platform were highlighted in red. Some 31 of the 84 were so highlighted[149]. These indications were the closest thing to a technical list one could find of the website.

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[148] The interview with Christl Lidl was conducted in an office at the National Studio of Contemporary Art in Le Fresnoy, France on the 12 February 2007.

[149] See Online research documents: MARCEL Network (2004d).

Much like the MARCEL Access Grid Virtual venue (see chapter 4.4.1), the website was a collection of media objects. But it differed from the virtual venue in that it had multiple symbols that explicitly represented the MARCEL network (logos, names, projects, etc.) including the recurring use of Marcel Duchamp's artwork Trois Stoppages Étalons (see chapter 5 and 4 for a discussion of Don Foresta's interpretation of the work and section 6.3.2 below for further analysis of its use in the website). Those working on the MARCEL website left traces of their agency on its construction. One of these traces was a list of names of contributors to the site's design that would grow from its first version to the third version:

Don Foresta
Gabriella Kardos
Roy Stringer
Christelle Fillod   Version 1
Christl Lidl
Magali Desbazeille
Samuel Bianchini

Lilian Frank
Lorella Abenavoli
David Le Grand
David Oliver   Version 2
Grzesiek Sedek
Graziano Milano
Dag Hensten Pettersen

Mike Scott
Heidi Cregge
Frédérik Lesage   Version 3
Yeshe Parks
Jacob Landry

These traces, in turn, created an historical archive of the site's existence as a collection of projects. It was employed to classify activities without necessarily producing them. If the project was to develop a permanent network, then the ambition embedded in the website was to cover all of the disparate elements of the participants' activities and interests and present it as a

whole to the public. Classification work, as the following sections demonstrate, remained a significant part of the work of MARCEL itself.

6.3.2 The navihedron

The navihedron was devised as a way of navigating large amounts of information online quickly. Its selling point was that within only "three clicks" of the mouse, one could reach "a potential of 1728 links"[150]. From its inception during the Souillac II meetings until the end of the field work, the navihedron was an integral media object for the website. The Souillac II report presented it as a "non-hierarchical information architecture tool allowing intuitive navigation of the network space" that would:

> *[...] allow participants of the 'Souillac Network' to post information on relevant art projects, educational programmes, research, events, pertinent information in many categories, online collaboration, and partnerships. It will be an open platform for expansion to interested future participants.*[151]

The essential visual impression created by the navihedron was of a floating dodecahedron – a three dimensional object with 12 equidistant points – embedded within the webpage. Each of these points, called nodes, is represented by a red circle labelled with one of the MARCEL categories. The user can then "turn" the object in place by dragging the mouse to bring certain points closer while the other points seem to become more distant as they fade into the background[152]. If the user clicked on one of the points, the object rotated so that the point selected moved to the front and centre of the object, "closest" to the user. A second click then initiated another rapid animation that "zoomed in" to the point in order to reveal the 12 sub-categories arranged in a similar fashion. A "back" button allowed the user to return to the previous set of categories.

Production work began on the navihedron in 2000 in collaboration with Roy Stringer of Amaze Inc. (later renamed Nascent Form Limited) from Liverpool, United Kingdom who had developed its initial design and presented it in the Souillac meetings[153]. By some accounts, the number of categories listed on the website was based on the formal properties of the navihedron. Technically, however, it could have been designed for almost any number of categories.

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[150] See annex 1: MARCEL Archive 00003

[151] See Online research documents: Foresta et al. (1999)

[152] See annex 2: image 2.6

[153] A 2001 application to the Arts and Humanities Research Board (AHRB) (MARCEL Archive 00126: 4) filed by Don states the worth of Roy's contributions to the project were estimated to be over £90,000 "by way of navigational software and consultancy."

It represented an aesthetic media object for classifying and organizing information before the wider availability of "Web 2.0" content management system (CMS) such as Drupal (see section 6.3.3 below).

Sadly, Roy Stringer would succumb to a deadly illness in 2001. Disagreement surrounding Nascent Forms proprietary rights to the navihedron ensued, making it impossible to use before the second version of the site was launched. Despite such setbacks, the active members of MARCEL continued their commitment to the navihedron as the MARCEL website's system of navigation, dedicating part of the website to his memory:

> *"The authors of MARCEL wish to honour the memory of Roy Stringer without whom there would be no MARCEL. His devotion, energy, generosity and friendship make him one of the principal founders of the project. Roy died on February 9, 2001. The project will continue with a special dedication to him."[154]*

The second version of the site – using Macromedia (later Adobe) Flash – fully integrated the navihedron into its navigation. A user visiting the site would encounter an introductory animation in which the elements of Marcel Duchamp's work Trois Stoppages Étalons (see chapter 5, section 5.6.1) slid out from the edges of the screen and assembled themselves into a whole to produce the artwork. The lines of the work would then shrink into a graphic element of the website's title bar in which the network's full name – Multimedia Art Research Centres and Electronic Laboratories – was spelled out in both English and French (one could click on these names to alternate the language of the site's navigation buttons from French to English and back). Once the user clicked on one of the points of the navihedron's subcategories, a static wikipage using HTML appeared with lists of information, documents and/or links. The navihedron was located below this title bar, accompanied by a menu on the left-hand side of the screen that displayed a brief summary of the category or sub-category selected by the user.

As presented in chapter 4, this second version of the site was assembled by the MARCEL team at Wimbledon School of Art. Some of the team who helped to set up the new site on the servers at Wimbledon and integrate the navihedron expressed reservations about its usefulness in interviews. Because the site was initially intended to be entirely designed using Flash, they believed it would have been too difficult to modify or manage content on the site. It was because of this worry, that the third "layer" of the navihedron was developed as wikipages which were deemed to be much easier to edit.

Beneath the navihedron, one found a set of links arranged horizontally for other functions available on the portal including: subscribing to the MARCEL newsletter, a search function

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154 See Online research documents: MARCEL Network (2004f)

for the site, a calendar, and also access to a section of pages about the MARCEL Network itself. This last section included a brief history of the portal as well as a list of members totalling 101[155] from Australia, Canada, Croatia, the Czech Republic, "Elsewhere" (see above), Finland, France, Germany, Hungary, Italy, The Netherlands, Spain, Sweden, Taiwan, the United Kingdom, and the United States. All of these members could also be found in the Members category on the navihedron under one or more of the following subcategories: Art Research Centres, Art Schools, Performing Arts Centres, Museums & Foundations, Industrial Laboratories, Science Laboratories, Media Laboratories, Faculties, Music & Sound Research Centres, Individual Creators, Film Schools, and Architecture and Urbanism. Those who had an Access Grid connection (through an Access Grid node or through a personal interface to the Grid) had their names highlighted on the wikipages within the subcategories as in the first version of the site. The members section, which was managed by Don Foresta by the time I began working on the site in 2005, listed a total of the 101 members (in some cases, members were repeatedly listed in different subcategories giving a much larger number than 101, for example, the University of Southern California in San Diego was listed 10 different times in as many subcategories of the members category). Of those listed, 54 organisations or individuals were connected to Access Grid in the 12 member categories.

The navihedron's formal properties did not shape the number of categories to some extent because it allowed for any even number of categories: twelve was not necessary. It could be argued that the navihedron was a manifestation of MARCEL's maverickness in that it represented a somewhat unusual media object for navigating information on the World Wide Web. But none of the individuals or documents encountered over the course of the research presented the object as an artwork. Its exceptionality was presented as functional: the way in which it allowed a user to navigate quickly through many links and as a personal tribute to Roy Stringer's contributions to the project.

As media objects, the two first iterations of the MARCEL website were embedded within the media form of the World Wide Web. Its pages were accessible from almost any web browser equipped with a Flash plug-in as in the second generation website (which could be downloaded online for free) and a basic Internet connection. The site was designed for users to engage with it through everyday media instances and experiences despite the navihedron's exceptionality. It functioned as a portal of links to other Internet websites related to MARCEL's classifications of what were the important issues facing media art and could be periodically accessed by any user at any time. Events could be posted on the site's calendar (few were however) but most of the information was made available as hundreds of links to other pages and

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[155] See Online research documents: MARCEL Network (2006)

sources. But these links could quickly become outdated or erroneous: in some cases, the URLs they led to changed, in other cases, the organisation would disappear or changed its name. Subsequently, a good deal of the work of maintaining the MARCEL website involved maintaining these links. The portal's many pages and specifically the validity of the links for each of the websites selected had to be confirmed regularly and, if incorrect, either discarded or updated.

By the time I began working for MARCEL on the Arts and Industry node in 2005, a third version of the site was under construction. Based on a sample of nine lists which identified the twelve MARCEL website categories, their node managers and their related organisation (the earliest of which is dated late 2000 with the creation of the first website through to the category lists made available on the website at the end of the case study in 2008) the names of the twelve categories remained unchanged over eight years. Although the categories had not changed in those eight years, the managers for each category and their related organisations changed extensively. Other than Don, only one of the individuals who had attended the first Souillac Meeting remained a manager. In her case, she had also continued to maintain the same node throughout all of the configurations. One manager who had attended the Souillac II meeting also remained consistently committed to one node throughout[156]. In a different case of change between two consecutive lists, commitment to managing the node was personal – the individual remained manager of the same node despite moving to a new organisation. In six cases of change from one list to the next, commitment was organisational and the responsibility of managing the node would shift from one individual to another. Based on the sample, there were an additional eight changes between lists in which the organisation and the individual managing the node changed entirely.

Some collaborations were ephemeral, leaving no trace on the website of activities or its participants. In the managers' meeting as well as in interviews with six former or current managers, some of the managers expressed having difficulty justifying working on MARCEL projects from within their own organisation – allotting time and effort to something that was not of the organisation itself. But the very contingency of these commitments meant that it was easy to sever ties on either side by 'just disappearing' as Don put it in section 6.2.2 (see also section 6.3.5 below).

Certain moments arguably represented opportunities to discard or replace some of the categories. Two of the 12 categories went through an extended period of inactivity while discussions and negotiations were underway to find a node manager. The Art and Science node was

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[156] Artists' Rights and Art History were the two nodes and ERICArts and The Langlois Foundation were the two organisations that committed to it.

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inactive for a good part of first three years of MARCEL's activities while the Technical Information and Development node did not have a definitive manager in any of the lists found. This seemingly contradicts the network dynamics described by Castells in which programs can be discarded and reconfigured. Despite all of these changes and opportunities for change, the categories persisted. The classification system remained as a meta structure for relating and categorizing MARCEL members and their relationships through projects. The classification first produced in the Souillac meetings became formalised through the MARCEL website as a reflexive classification project that involved constructing an art world network.

There existed a "thirteenth" category on the website that could be accessed through various points in the site including sections and subsections in the Project Workspace category. This was the Working Groups category. These groups consisted of specific projects in which MARCEL members were involved, having to do with 'high bandwidth and AG'. The category listed nine projects, one of which was the "Hi-Bandwidth Art Research Network-UK" (addressed in greater detail in section 6.4).

All MARCEL related activities were classified under one of the 12 categories and/or under the Working Groups. At this point, the MARCEL website as a media object on the World Wide Web, was deemed insufficient to keep MARCEL Network members connected. It did not enable real-time collaboration and did not directly further their cause of appropriating the high bandwidth network. But it did arguably become a boundary object (Star and Griesemer 1989) for the art world network in that it mediated understanding of the network's members and activities, despite the varying disciplinary backgrounds of these members.

6.3.3 The MARCEL Website in daily work

In sections 6.2, 6.3.1 and 6.3.2 I have analysed the MARCEL Network through its formal classifications as lists and, subsequently, its digitally networked system of classification on the MARCEL portal website. This section turns to a reflexive analysis of my personal experiences in contributing to the maintenance of the MARCEL website based on participant observation from 2005 to 2008.

My work with the MARCEL Network began in September of 2005. Don had initiated an email correspondence with me to begin work on planning some aspects of what I was told was the first face-to-face meeting of all of the MARCEL managers. We also began to work towards securing funding for this meeting as well as other administrative issues. I was encouraged right away to get Skype or iChat in order to "set up a connection" between the two of us in order to avoid expensive long distance calls between London and Paris where he was located. This first period was somewhat chaotic for me. Most of my days were spent juggling between my own field work – meeting MARCEL members, making arrangements for the managers'

meeting, reading documentation, etc. – and my academic obligations to the Media and Communications PhD programme at the LSE – attending the induction and first-year lectures and seminars, producing coursework, etc. As part of my studentship, the department gave me access to an office where I could conduct some of my research and especially install and use Access Grid. Over the next few weeks my office setup began to take shape as I waited for different staff to install my computer and later to get permission to install the "correct applications" (see chapter 4). Soon, someone from LSE maintenance inserted a standardized LSE label on the office door that read: "Frederik Lesage, MARCEL Project Officer, Department of Media and Communications".

Once set up, Don and I began a regular correspondence over Skype (since the LSE did not support Apple products, I could not contact him via iChat, his preferred platform for such correspondence). Over the course of the field work, I documented at least 42 such meetings either by phone or over Skype (in some cases, we would switch to the phone instead of Skype because of a bad connection or other technical difficulties). These meetings never took place at regular intervals and varied from a few short minutes to more than an hour. In some cases, we would arrange a time using email. In other cases, either one of us would try to reach the other via Skype if their status on the desktop toolbar indicated that they were online. In most cases, these meetings were spent relating our progress to the other on any number of MARCEL activities including funding applications, making travel arrangements, and preparing meetings as well as work on updating the site. Another 20 meetings took place in person (not counting group meetings such as the MARCEL Managers' meeting, the Independents meetings (see below) or Global Threads meetings (an additional project which this document does not address, see sections 3.6.3 and 6.2.4). Three of these meetings took place at the Wimbledon School of Arts in the latter part of the case study (see below), the rest taking place either in LSE offices (mostly my own), or the occasional London coffee shop or hotel lobby depending on who else we were meeting. As was the case with the phone and Skype conversations, our work on the website was only one of the many projects discussed during these meetings.

Early on in the study, Don sent me a copy of a document named "MARCEL web site management – Getting started"[157] which provided instructions for accessing and modifying the second generation website's content. Instructions were fairly straightforward for someone like me who was familiar with HTML and who had already edited wiki pages. I must concede, however, that I received invaluable additional pointers from Grzesiek Sedek during an early meeting with him at the Wimbledon School of Art (see section 4.4.1) and subsequently via email throughout the period of the field work (see also section 6.3.5). Most of the work de-

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[157] See annex 1: MARCEL Archive 00055

scription focussed on maintaining and updating links in each of the twelve subcategories. Don explained to me that other node managers intended to add or had already added additional services to their sections but the Art and Industry node consisted entirely of links to related sites as well as information about events such as the Souillac I Charter for Arts and Industry. Early on, Don suggested I not spend too much time adding new links as a newer web site, the third version, was on its way and would soon be online.

The instructions provided in the document for getting started did not include a template for selecting links similar to the one developed by the students at Le Fresnoy (see section 6.3.1) nor did it provide some kind of editorial policy about what constituted the Arts and Industry node. Both Don and Roger Silverstone who was designated as the LSE's Arts and Industry node manager at the time refrained from giving me any specific guidelines about what the node's content should entail. I was essentially given the freedom, the flexibility, to decide what links should or should not be a part of the node. In my case, this complicated matters as I did not want to mischaracterise what constituted appropriate sites to include within the section. These reservations may have been amplified by my own hesitant nature and my initial worries about the objectivity of my research. But this freedom seemed linked to the values that circulated among the MARCEL membership. The following example illustrated this well.

At a point in the MARCEL Managers' meeting (see below) I took the opportunity to ask the group of MARCEL website node managers what they thought about the relationship between art and industry, specifically its ties to notions of the creative industries. I asked this question because the creative industries, familiar to me through my MA studies, represented a significant and increasing body of literature that seemed to me at the time to deal in interesting ways with the relationship between the arts and commerce in innovation. All of the four managers who replied to my question during the meeting treated the term with suspicion. They each provided some historical references to what they felt were divisions between artists and their work from other practices:

> Participant: But you also have to be aware that the term creative industries is highly political, you know, coming from the UK, and there's another term – the culture industries – it has a strong history and base in the Frankfurt school. Which is something a little bit different from the thing called creative industries as being used today especially in the UK which is again something different from art and industry and if you acknowledge the debate, I think art and industry is very relevant because they're saying: "Okay, there are artists and there are professional artists, they are doing their work and they don't necessarily have to be an artist and not everybody is an artist." Which other concepts of the creative industries more or less use this notion of "everybody is creative".[158]

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[158] See Annex 1: MARCEL Archives 00086

Though this suspicion was made clear, I was also told that each participant could produce and arrange links and texts within the category in the direction of their choosing.

> *DF - Of course it's the take of one person for the time being. I mean, what's our choice? Hopefully you'll develop contacts with other people and get other feedback on the whole thing. But, you know, you're the ultimate filter. And I don't think there's anything wrong with that. Obviously there has to be a point of departure and that's it.[159]*

In my case, the category of Art and Industry served as the point of departure. I had to take responsibility for the category and develop my own take on the matter. But the issue of developing an editorial policy, of creating a framework for classifying which links were appropriate and which were not, still related to an understanding of art or, more specifically, of the artist. As in section 6.2.1 where the conceptualisation of what it was to be an artist was presented as a kind of litmus test for membership, the underlying reference point for work in the category remained a shared vision of what it was to be an artist. I would continue to maintain and prune the links displayed in the Arts and Industry node until work began on the third generation of the website. I felt a sense of anticipation, and a bit of apprehension, at the idea of developing my own "take" about the relationship between art and industry. Unfortunately for all involved, the transition to the newer version of the site proved difficult.

6.3.4 First meeting of the MARCEL Managers

I first encountered a version of the third generation of the MARCEL website at the MARCEL Managers' meeting that took place at the LSE on 20 March 2006 (see also chapter 5, section 5.2). The meeting's objective was to discuss the current design for the third generation of the website. The second version was believed to be too difficult to update. For example, any new information posted on a page of the site had to be written in basic HTML within the existing code of the page. According to MARCEL members such as Graziano and Grzesiek, recent developments in online content management systems (CMSs) for large websites and blogs were emerging as a standard for providing more efficient means of updating content. One such system was used to develop the third generation of the MARCEL website.

A few days prior to the meeting, however, I was informed of a major complication. Just as there had been a problem with Nascent Form and acquiring the navihedron for the second generation website, a new obstacle had blocked the third site's development. THEpUBLIC, which was to open in 2006 in Birmingham and had been the organisation behind the site's

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[159] Ibid

development, had since gone into appointed administration[160]. One of the original partici-
pants in the Souillac meetings, Hannah Reddler, had worked there before moving on to the
Dana Centre in London and Graziano Milano, a former student at the Wimbledon School of
Art had subsequently taken on a number of MARCEL related projects there (see section
4.4.3). It was at THEpBULIC that Graziano Milano, with the help of other employees there
and some private contractors, had developed the website using Exponent, a CMS for the
World Wide Web. Because of this recent organisational uncertainty, it was unclear whether
there would still be enough resources to finish the site's development or if the site could be
maintained on THEpUBLIC's servers. At the time, the second generation site was still stored
on servers at the Wimbledon School of Art. MARCEL members had hoped to house the new
site at THEpUBLIC. These unfortunate developments meant that the responsibility for de-
veloping and maintaining the site would have to be transferred to another organisation.

Graziano's ensuing presentation of the third generation website was subsequently compli-
cated by the new situation. What was initially planned as a presentation of the site's function-
ality, a discussion of best practice standards (for example, he suggested that the best web
browser to use for visiting and updating the site was the open source Mozilla Firefox browser)
and an opportunity to collect feedback from the assembled MARCEL managers, also became
an urgent discussion about who could take on the site's development[161].

Besides this implicit concern, three issues surrounding the website's future were raised dur-
ing the discussion that centred around working standards for the site:

The first of these issues focused the what language would be used on the site itself. The previ-
ous site presented two alternate versions, one in French and one in English. For every update
in one of the two languages, a similar change on the other language's equivalent page had to
be made. Because most of the MARCEL Managers at the time did not speak or write in
French[162], much of the work of maintaining two parallel sites meant finding translators that
could make these changes. This represented a considerable amount of time and resources for
Managers. Although the first site had been created in France in part by French students, the
current site was now housed in the United Kingdom and none of the MARCEL Managers
other than Don Foresta were located in France. Three main solutions for the issue were dis-
cussed at the meeting: to limit the site to English only, to maintain the site in both languages

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[160] It would later open its doors in a new building and under new management in June of 2008. See Online Re-
search Documents: Sudjic (2006)

[161] In a different part of the meeting, Graziano would also present Streaming Tales. (see section 4.4.3)

[162] Besides me, only three other MARCEL Managers could speak French including Don Foresta and the two
longest serving node managers.

as best possible, or to rid the site of any explicit language thereby enabling anyone to post links in the language of the site it linked to. For example, a link to a site written entirely in German would be posted in German only. The first and last option presented the advantage of only having one set of pages instead of a second "mirror" site.

The first option for the new website was deemed the simplest as the site had already been developed in English. The designers simply needed to "cut and paste" the material from the old site into the new one. The design also did not enable its users to write content in an alphabet that employed accents. Two reservations were expressed about this option: 1) Don felt that keeping the French site would help to promote the site in France in the hopes of re-activating more French members; and 2) the two Canadian node managers at the time felt that discarding the French site limited MARCEL's appeal to their provincial and national government stakeholders who encouraged bi-lingual collaboration. In the end, it was determined that the design would focus on getting the English site up-and-running, leaving the final decision for another time.

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A second issue focussed on the importance of the navihedron as the basic media object for navigating the site's information. In its existing state, the site's design had not integrated the navihedron. Some wondered whether it was at all necessary to include the navihedron in the newer version of the site. This discussion related to a wider consideration of the site's design history and the process through which it had been built to date:

> Participant: You know, you build something and then you get some more money and then you build something onto it and something onto it. MARCEL kind of feels like that because, the navihedron was – remember when we were talking about this at first – four clicks into how many rooms? Twelve, twelve, twelve...

> DF - Yeah, one thousand eight hundred...

Participant: Of course, that was the beginning of using that tool. So that was like walking into a foyer. Twelve doors, open one, twelve more, twelve more, twelve more. And then that, because of Roy's death, came to a rest. And then the next generation, the next version of the website... So it's like a poor man's Kentucky home. We built a little of this, and "Oh a new architecture!" and we joined onto it. And I think that's the essence of what we're talking about. When you're building a website, you're building a metaphor for a building. "What should I see first?" What's important? Is it the links? Or the projects?[...] [163]

With the use of a content management system to design the new site, the navihedron's functionality as an efficient means of navigating the site was questioned. But this exchange and the metaphor of the poor man's Kentucky home also summarized the overall uneasiness or uncertainty among the managers about what standards (as in the case of what language to use) and what media objects to keep from previous sites and what to discard.

By the end of the meeting, the managers determined to take out the navihedron from the site or at least to nestle it within a subsection of the third site as part of an archive of the second site. The decision represented a compromise between those, like Don, who wanted to keep the navihedron as part of the new site and those who suggested that it be discarded altogether.

The third issue concerned what kind of commitment each of the managers was willing to make to MARCEL and the work of maintaining the site. As was alluded to in the question of what language to use for the site, much of MARCEL's activities were funded by public stakeholders such as Arts Councils or through research grants. And as alluded to in the Kentucky home metaphor, much of the funding for updating and maintaining the website took the form of project grants. MARCEL itself did not generate revenue from sales of its works or tickets to attend events, nor did it receive a steady stream of structural funding on a recurring basis. Each step of the website's development was, to some extent, independent: each step had to define its own objectives to stakeholders. The daily work of maintaining the site and the relationships between managers did not, in the short term depend on funding. All of the managers' daily work was tied to other personal or organisational interests: in some cases relating to academic worlds, scientific worlds, the art market, personal artistic careers, etc. This could be understood as being akin to Becker's actors' "side-bets" (Becker 1960, see also Star 1992: 402) when developing commitments within a social world: commitment to MARCEL for these managers represented one of many ongoing commitments. The commitment on the part of the managers to each of these side-bets would have to be weighed against their limited access to time and/or resources.

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[163] See Annex 1: MARCEL Archives 00086

For example, my own work updating the Arts and Industry node on the MARCEL website was only part of a whole set of other projects and personal commitments. Besides other MARCEL projects and the academic work referred to in section 3.4.2, the period covered by the field work also involved taking on part-time contracts for teaching and research through the LSE. In this span of time, I would also experience great personal sadness such as attending Roger Silverstone's funeral who had been one of my supervisors, as well as great personal joys such as getting married. All of these events were intermixed with the personal and professional lives of the other MARCEL Managers and contributors who also took on other contracts and, in some cases, alluded to important personal events like the birth of children, the loss of a job, or new romantic relationships. As discussed in section 6.2.1, most engagements to MARCEL were voluntary and flexible in the sense that the time and resources dedicated to the work could be 'de-activated'. Collaboration work in MARCEL implicitly meant respecting or at least acknowledging everyone's contingent commitment to its projects. But part of the objective of the meeting was to determine what kind of commitment each of the managers was willing to make to the website. This meant signing a contract that made commitment explicit at either an organizational or individual level. Each of the members were asked to take away these contracts to sign.

Over the course of the two-day meeting and subsequent email exchanges, the managers determined that the site's existing structure was too complicated for anyone else to complete. As the MARCEL coordinator, Don Foresta took on the work of coordinating the construction of the site and to determine who would eventually take-up the new site. Taking up this task reinforced Don's network making power within the MARCEL network: specifically, using the feedback from the MARCEL managers, Don would re-programme the site's design in order to fit MARCEL's current position. But necessarily, this could not be accomplished on his own. It was at this point that other manifestations of power relating to networks became apparent.

6.3.5 Work on the third generation of the MARCEL Website

The programmer role is not the only form of network making power relating to collective work in the process of building and maintaining networks. The other role identified by Castells for this exercise of power is switching (see section 2.4.3) – in this case linking technical standards of new media to the art world network. In this case, it required certain forms of knowledge that Don, as the coordinator, did not possess. This brings the chapter to another transition that examines some of the power relations involved in managing MARCEL in the development of the website was the choice of platforms for developing the third generation of the website.

The feeling expressed by managers at the end of the MARCEL Managers' meeting was that the website's design was paralyzed because the recent developments at THEpUBLIC. Don and Graziano would later inform me that they encountered problems with the developer contracted for the design of the website's third generation because of issues of remuneration complicated by THEpUBLIC's appointed administration. Negotiations had stalled, leaving no recourse for Don and the MARCEL members but to start from scratch without any resources. This stalled the third generation's progress for over a year. Some, including Grzesiek Sedek, volunteered their time to piece together a new site over this period.

Starting from scratch represented an opportunity for the site's new designers to make certain choices about the new site's design and its technical standards. Grzesiek, who worked from the Wimbledon School of Arts and who was designated as the third generation website's new designer, picked a different content management system known as Drupal for its overall design. Grzesiek had been one of the MARCEL members who expressed dissatisfaction with the inflexibility afforded by the second MARCEL site's use of Flash (see section 6.3.2 above). During one of our subsequent meetings to design the website, he explained how his choice of Drupal was based on its flexibility as a content management system. He also believed that it was most likely to "survive" as a content management system standard because of its large community of users. In a way these arguments echoed Mike Daw's arguments for Access Grid (see chapter 4). Similarly to him, Grzesiek felt that, although "people are scared of Drupal because it's complex" (Grzesiek Sedek 6 November 2006) this issue was remedied once the designer knew what was needed and the site was set up. Keeping with the analogy used in chapter 4, section 4.4.2, one could reiterate Grzesiek's argument as being that the MARCEL website designed with Flash produced a toaster media object, while Drupal's design resulted in a grill. This view was also supported by his past experience in using Drupal to design the Alterne website (see section 5.7.3) and some of its design advantages[164].

As a self-described "Open Source and Linux enthusiast", Grzesiek was familiar with many programming languages and online protocols. This meant that from an ideological standpoint, applications such as Drupal – an open source content management system – and Access Grid or Pure Data (see section 4.4.1) were better suited to his view of new media work than more "mainstream" applications being taught in most art schools at the time:

"I've been using open source for many years. I'm just really trying not to use anything else. [...] You see, the thing about Art Schools is that it's pretty mainstream you know, the

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[164] One example he gave me was that Drupal provided each content page with its own URL, thereby making it much easier to search for information and to update.

things they want to teach you is Photoshop, and Dreamweaver, and Final Cut Pro, and things like that." (Grzesiek Sedek 6 November 2006)

Because Grzesiek was employed on many other contracts (His contract with Wimbledon School of Art unfortunately did not cover, as he put it, "paying for cool experiments with video and video streaming." (Grzesiek Sedek 6 November 2006)), much of his work designing the website took place in spurts on his own time. The basic design for the site required a level of expert knowledge of Drupal and programming language that few of the MARCEL members could help with. By 29 May 2007, however, the site's new design had reached a point where Don believed certain tasks could be taken on by others. It was with this in mind that Don, Grzesiek and I arranged a meeting over Skype to discuss and coordinate the work.

Part of the objective in this redesign was to install a WYSIWYG[165] toolbar in all of the text entry fields available for node managers and other users. This would make updating the site possible for users who were not familiar with HTML language. Another objective was to update a number of user profiles on the site and to install a keyhole function (literally represented as a keyhole on the site) that allowed only registered users to access particular content and functionalities on the site. Other MARCEL members including a graphic designer in Boston – who would design the visual aspects of the site – and students working at the University of Maine – who would transfer the site onto the University's servers (since the Managers' meeting, they had accepted the role) – were also waiting in the wings to work on the site. Unfortunately, other obligations on Grzesiek and Don's end impeded progress on this first meeting.

A second meeting was arranged for 1 June 2007. This time, I visited Grzesiek at the Wimbledon School of Art to work with him on the site in his free time. We met in one of the School's computer labs. The lab was made up of two connected rooms, approximately 7 meters by 5 meters, the other 5 meters by 5 meters. Each room had long tables with different computers set up on them: different screens in different sizes, all in the old style cathode screens, in different brands. The walls were plastered with A4 sheets reading "No food or drink", and instructions for printing and making DVDs. I found Grzesiek in a small adjacent office in the corner of the larger room while a dozen students worked on some of the computers[166]. I would later find out that his makeshift Access Grid node next to the printing rooms (see section 4.4.1) had since been closed.

We met with Don using Skype for audio. Both ends loaded the website and began to work with only intermittent interruptions. Occasionally, on Grzesiek's end, a student would inter-

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[165] Acronym for What You See Is What You Get

[166] See Annex 1: MARCEL Archives 00083, 13.00, Wimbledon School of Art, 1 June 2007.

rupt to ask a question about using Photoshop. Even though Grzesiek was on his lunch break, he would step out to help. We could hear the noise of Parisian street traffic on Don's end. At one point, both ends needed to disconnect and re-connect because of "scratchy" sounds in Skype's audio signals.

The work of programming and switching was mediated on two levels: 1) at level of information exchange about the site's design; and 2) at the level of information exchange about how to design the site. Information exchange took place over the course of the discussion on Skype. Both Don and I were getting a real-time tutorial from Grzesiek about how to accomplish certain tasks on the site. Don determined the order of the design work using a list of changes that needed to be completed. He needed these changes to be done in order to move the project on to other designers (see above). While running down the list, which included setting up the WYSIWYG toolbar and changing some of the user settings for individual profiles, he also prioritised the specific tasks related to each change based on what was repetitive and simple against what was complex. The latter was reserved for Grzesiek to accomplish. The former tasks, such as copying and pasting texts or ticking boxes in hundreds of fields in order to activate specific properties in specific sections or profiles of the new website, Don set aside for he and I with an "I'll do that".

After an hour's work on Skype, we disconnected with Don. The three of us each had a list of changes that needed to be done on the site. We communicated via email to arrange the next meeting. By the time of our next meeting on 12 June 2007, the new website boasted a new navihedron as part of its main navigation. A new version had been developed by one of the students at the University of Maine and put online with Grzesiek's help. Despite the Managers' meeting's conclusions, Don had asked that the navihedron be integrated into the site's basic design. In this case, however, a Drupal menu bar was still visible on the left-hand side of the website so that one could navigate the information without the use of the navihedron. This time, Don and I met with Grzesiek in person on the second floor of the Wimbledon School of Art's Research Office. Don having travelled to London for a series of meetings. This other office was in a separate building from the rest of the School and had fewer students circulating. Grzesiek had a station in one of the office rooms with Mac desktop computers. We pulled up some chairs and sat around him as he alternated between his station and his laptop as he worked. Each of these working sessions was an opportunity for Don to clarify his priorities for the site. Grzesiek, on the other hand, explained to us what could and could not work. Don would ask if something was possible and, if unable to provide an answer, Grzesiek would reply that he "would have to work on that" between then and the next meeting. For example, he informed us that there were compatibility issues with the WYSIWYG toolbar and that it

would take more time to figure out. All the while, Don and I would use other stations to update user fields.

The three of us would meet again one last time at Wimbledon on 17 September 2007. By then, the site had been moved from the Wimbledon servers to the University of Maine and the WYSIWYG editor was in place. As we sat down to finalise some of the user profile settings, Grzesiek identified a problem. He could not edit some of the work because the site had been reconfigured at the University of Maine using an older version of Drupal instead of a more recent version Grzesiek was using in Wimbledon. This caused compatibility issues with some of the changes Grzesiek had been asked to make to the site. This problem illustrated the degree of complexity in coordinating such work between a number of different sites. It was at this point that my contribution to the design of the third generation of the MARCEL Website's backend came to an end. Most of the work would subsequently be conducted in North America. Don would continue to coordinate the site's design from Paris, sending me the occasional progress update either during our other meetings or via email over the MARCEL website's mailing list. Grzesiek also remained involved in parts of the site's development.

By the end of the field work on 1 April 2008, the site had moved completely to Maine. Each generation of the website had had a different physical location: the first in Le Fresnoy in France which, in turn, moved to Wimbledon in the United Kingdom where the second site was developed. As the third was completed, it also moved, this time to University of Maine in the United States.

But one must also not overlook the enjoyment these two took in working together – appreciating the talents of the other. As I subsequently noted after our last meeting:

"Don, at one point, turns rapidly to me with [a] smile of disbelief and admiration as we watch Grzesiek scroll through the thousands upon thousands of lines of code on one of the screens in front of him"[167]

The proficiency with which Grzesiek could scan through code and resolve complex technical issues was undeniably impressive. I had to admit that it was also a pleasure to watch them work and to learn of all of these new developments and to see how expertly one could use or modify online tools.

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[167] See Annex 1: MARCEL Archives 00083, 15.00, Wimbledon School of Art, 1 June 2007.

6.4 The independents

The previous sections developed the classifications used to represent collaborations among the MARCEL members and specifically, how the MARCEL website was designed and used as a media object for such a classification. This section now turns to the work of classifying Access Grid and the high bandwidth network within the MARCEL network. Its focus is a series of meetings, discussions and other forms of work surrounding the development of a working group (see section 6.3.2) relating to providing high bandwidth connections to media art centres in the United Kingdom. The section also develops some aspects of a media centre's work on a different platform as a contrasting version of classification.

6.4.1 Getting the independents connected

A large part of the participant observation conducted over the 31 month period involved following Don Foresta or other MARCEL members to various meetings with representatives of other organisations to discuss potential collaborations or projects. Since Don had 'stopped being an artist', the work of promoting the network and recruiting new members for MARCEL occupied much of his time. Part of the goal in such recruitment was to encourage individuals and organisations to produce works on the high bandwidth networks.

Having learned from the work developed and implemented by Don and Georges-Albert Kisfaludi in France for Artistes en Réseau, Don, Tim Jackson and others concentrated their efforts on gaining access to the academic network as a means of squatting existing resources. MARCEL members hoped that drumming up interest and projects would provide the "critical mass" needed to get MARCEL going and thereby classify high bandwidth standards into art world conventions.

> *"We still need that notion of belonging to an idea, so that if we set a precedent for instance, in the UK in getting the independent media art centers on-line, on the academic network, then people in Canada or the US or France can pick up that same idea and go to their administration and say 'Look, they did it there. Why can't we do that here?'" (Don Foresta, 22 June 2007)*

In at least three cases in interviews, members referred to the Société des Arts Technologiques (or Society for Arts and Technology, SAT) from Montreal, Canada, as an example of successful overseas exchanges. Seven representatives from Montreal's media art world had participated in the Souillac II meetings and had successfully employed the Souillac Charter to lobby local and national stakeholders for funding support in Canada[168].

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[168] See http://archives.sat.qc.ca/references/ for a version of the related report

The "Hi-Bandwidth Art Research Network-UK" working group represented a similar initiative. It was devised to act as a "representative of independent centres vis-à-vis other bodies, as a platform for joint funding for specific projects or programmes and as a lobbying body for furthering the objectives of the combined organizations"[169] relating to high bandwidth connections in the United Kingdom.

By the early 2000s, national funding bodies in the United Kingdom such as the Arts and Humanities Research Board (AHRB, later renamed the Art and Humanities Research Council in 2005, see AHRC (2008)), the Joint Information Systems Committee (JISC) and the United Kingdom Education and Research Networking Association (UKERNA which would later be renamed JANET(UK)) demonstrated some openness towards providing access to the national research network JANET through the creation of initiatives such as the Methods Network (see section 4.2.4). MARCEL's goal of "finding a place for art, culture and education in the high bandwidth network space"[170] coalesced well with attempts to encourage independent art centres to produce artworks on the high bandwidth network. But convincing artists' centres and the United Kingdom's institutional support structures that provided access to the connection to work together represented a considerable challenge facing MARCEL. As with other initiatives in the network, a working group was formed. In this case, its objectives consisted of exploring:

> *[...]the potential of the high speed UK Educational Internet Network, Super Janet, as a space for creative productions and to identify the opportunities for new types of research that innovative networked ICT tools can facilitate between different sectors of the creative industries and the research base.*[171]

These objectives were to be attained in large part through activities such as seminars of independent media centres in the hope that an eventual agreement between UKERNA and the independent media centres would be reached.

6.4.2 Meeting the Independents

I first accompanied Don for a meeting with what he termed the independents – media art centres that were independently run and funded by multiple funding sources including public subsidy and audience revenues – on 1 December 2005. The meeting took place at the Watershed Media Centre in Bristol. We arrived late to the meeting due to a delay on the British rail network from London. The 12 participants sat at a set of tables arranged in a square in the

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[169] See Online research documents: MARCEL Network (2006)

[170] See Annex 1: MARCEL Archives 00086

[171] See Online research documents: MARCEL Network (2007)

middle of a conference room in the Centre. Everyone attending had waited for Don's arrival to start officially. Half of them had brought laptops and were already typing away and would do so for most of the meeting. The day's schedule was divided into morning and afternoon sessions. Two hours in the morning session were dedicated to an open exchange between the participants. All worked for/with independent media art centres from across middle and South-east England. As I sat through the morning, the meeting was a flurry of unfamiliar names and acronyms of people, organisations and technologies. Don presented Access Grid and high bandwidth networks, specifically JANET, to those present as a means of opening the door for independents media art centres to new audiences. Conversely, he presented the meeting as an opportunity for independent media art centres to convince UKERNA representatives that they would be suitable providers of cultural content for the high bandwidth network. Despite this, many participants expressed frustration with the degree of limited financial resources and knowledge expertise available to them in order to access high bandwidth networks (see section 4.2.4 for a detailed description of costs). They also expressed reservations about the limited scope of the network's audience. Because physical connections to the high bandwidth network were limited, some argued that it represented little to no advantage in trying to reach audiences online, especially those outside academic circles. These frustrations became a recurring theme all along the discussions of Access Grid and MARCEL over the course of the research (see below).

The afternoon session was reserved for two presentations. The first by Hilary Baxter, a representative of the UKERNA. She expressed an interest in making the "over engineered" JANET a more public service network, at one point mentioning that UKERNA had sponsored access to further continuing education programmes on JANET for convicted felons. This was immediately seized upon by participants in the meeting, including Don and, subsequently, Graziano Milano who would later appropriate this statement in order to produce a playful argument along the lines of "If prisoners can get access to JANET for free, it seems reasonable that artists would too" in subsequent meetings. The second presenter was Mike Daw from the University of Manchester. It was during his presentation that I first witnessed artworks using Access Grid including the SC Global conference and Kelli Dipple's work (see section 4.4.2).

As with other MARCEL projects, the working group would continue to coordinate the project and move it forward between meetings. At this stage, getting the United Kingdom's independent media centres connected through MARCEL's initiative was in large part coordinated by Graziano Milano who kept in contact with Don via email and occasional meetings in London. Graziano had initially been able to build on his successes as a project manager for the THEpUBLIC in getting a high-speed connection up and running with events such as the Streaming Tales project (see section 4.4.3). It was Don and Graziano's initial hope that build-

ing a consortium of independent art centres in the United Kingdom would not only increase the number of artworks but also ensure that THEpUBLIC would have interested collaborators in the country. Once THEpUBLIC went into appointed administration in 2006, however, Graziano continued to build on this initiative in the hope that such a consortium would take shape despite THEpUBLIC's untimely problems. This meant organising and coordinating further meetings between art centres and especially finding the funding and institutional support that would ensure this working group's coordination over time.

As part of this work Don, Graziano and I scheduled a meeting on 4 September 2006 in my office at the LSE. Another reason for the meeting was to prepare an application for an Arts Council England (ACE) Grant to fund some of the improvements for the MARCEL website (see section 6.3 for a discussion of the third MARCEL Website). Graziano had already initiated some research on the matter of the Independents. He informed us that JISC/UKERNA were planning a call for project proposals that included a section for the arts and humanities. Of those who had attended the previous independents' meeting in December 2005, five media arts organisations had signalled their interest in pursuing this venture and had already signed on as members of MARCEL. A second meeting of the independents represented an opportunity to put together a JISC proposal and potentially get funding for ongoing access to JANET. Don explained to me that part of this funding would include a contract for Graziano to work as the project manager. According to Graziano, either the Arts and Humanities Research Council ICT Methods Network (Methods Network), a partnership of academic institutions including the Centre for Computing in the Humanities, the Royal College of Art, Royal Holloway and the Humanities Research Institute, or the Arts and Humanities e-Science Support Centre (AHeSSC) were willing to sponsor a second meeting. Both the Methods Network and the AHeSSC were housed in offices at King's College London, only a few streets away from my office at the LSE.

By the end of the meeting, Don and Graziano exchanged information about recent events, projects, and interests. The conversation eventually led to a comparison of Access Grid's video streaming capabilities and that of QuickTime and other similar video compression formats. Graziano argued that platforms such as Access Grid would eventually disappear because these other commercially supported formats benefited from more regular updates and could now also deliver functionalities such as multicast (see section 4.2.3). Although Don conceded this point, he believed it important to use as many of these tools as possible because it provided greater flexibility. In the case of videoconferencing, for example, this meant using iChat (which uses QuickTime), Skype and AG. The meeting convened in a similar fashion to our work with Grzesiek on the website, with an agreed upon set of tasks for each of us to accomplish before our next meeting. This included filling out different sections of the ACE applica-

tion and developing a list of interested parties that would eventually include 12 media art centres from across the United Kingdom[172].

We would not meet face-to-face again until Don's return to London on 17 October, 2006. As with the work of designing the third generation of the MARCEL website (see sections 6.3.4 and 6.3.5), meetings and similar work would take place in spurts. Since neither Don nor Graziano were working only on the Independents project, meetings and correspondences were irregular and had to fit with everyone's schedule. From a personal perspective, this made progress seem slow as I was anxious to continue the fieldwork. I also worried that I was "kept out of the loop" for certain email correspondences or meetings. However, after a few weeks of silence, email exchanges would start up again and work resumed where we had left off.

The 17 October meeting also took place in my office. Graziano and I worked in the late afternoon to complete and piece together the ACE Grant application for the website discussed in the previous meeting. Later in the day, Don joined us to discuss the Independents' meeting and projected application to the JISC and UKERNA. I soon realized that Don and Graziano were having an ongoing conversation over the course of this work about the future of high bandwidth. Evidently, they did not share identical conceptualisations of the potential for high bandwidth. On the one hand, Graziano likened UKERNA to the "[British Telecom] for academic networks"[173]. Like BT, he believed JANET would eventually be privatized. This, he argued, did not necessarily represent a bad thing since it would lead to greater public access and less bureaucracy. He also related to us some of his recent experiments with videoconferencing applications such as iChat or non-proprietary equivalents for the Streaming Tales project (see section 4.4.3) and how he and his collaborators hoped to install the performance in kitchens rather than simulating such a setting in an academic or other kind of space. A more accessible form of high bandwidth, he felt, was better suited to this kind of experimentation. On the other hand, Don acknowledged that an eventual privatisation of academic networks was a possibility, but that it represented a significant danger. He perceived this imminent commercialisation as inevitably limiting high bandwidth's potential as an emancipating tool for artists working online. As an example, he argued that in its early days, television was also touted for its potential as an educational tool for the masses (This fit within Don's wider arguments about the limitations of the television art world, see chapter 5). Don believed in the importance of creating an expert 'communication space' for artistic production where experimentation could take place (see chapter 4 for a more in-depth investigation into his phi-

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[172] See Online research documents: MARCEL Network (2007)

[173] See Annex 1: MARCEL Archives 00081, London School of Economics and Political Science, 17 October 2006.

losophy). Practically speaking, Don felt that the surest course to take was to find support among academic and national public funding bodies such as JISC: to squat the network before it was commercialized. Graziano, as others had done in the Watershed meeting, argued that such a media form was too costly and constrained by bureaucratic ties. He argued that it was preferable seek out what the research would categorize as an 'everyday' media form where audiences could more easily access the connection, thereby making the work more accessible.

The outcomes of that day's meeting disappointed Don. As a result of this second meeting, it became clear to him that the representative from UKERNA was only interested in developing a 'political document' instead of a project proposal. He expressed his frustration with academic organisations who "don't understand deadlines"[174]. Again, we divvied up a series of tasks between the three of us and went our separate ways. We would reconvene again on 20 November 2006.

Sadly, our efforts in applying for the ACE grant would prove unsuccessful. Two other applications to different funding institutions for different projects would also go unrewarded over the course of my work with MARCEL. Applications were an important part of work in the network: seeking out calls for applications and project proposals, meeting with application officers, filling out forms. This in turn contributed to a large extent to the uncertainty of realizing projects and ensuring consistent and sustained funding for aspects of the network. The 20 November 2006 meeting confirmed an approximate date for a second Independents meeting. The date would be set for 19 March 2007. In a way, these meetings were not only an opportunity for the two to advance projects relating to MARCEL, it was also an opportunity to sit together and discuss options and new developments, be they technological or otherwise. The debate between Don and Graziano did not end that day. These talks provided me with important clues about the necessary work of attempting to classify Access Grid and other media forms as part of the network. As with the discussion raised in the Managers' meeting, a wider ongoing debate about the usefulness of squatting the academic high bandwidth network was underway.

6.4.3 VisitorStudio

Over the course of these meetings, I developed an interest in further investigating some of the other options available to these artists for real-time online collaboration between multiple connections. Specifically, during our first meeting, Graziano had mentioned that low bandwidth options were being investigated by media art centres. One such example, developed by

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[174] See Annex 1: MARCEL Archives 00081, London School of Economics and Political Science, 17 October 2006.

a group known as Furtherfield and whom he had collaborated with, was known as VisitorStudio.

It was in part through Graziano that I was able to come into contact with the two founding members of Furtherfield: Marc Garrett and Ruth Catlow. Ruth had attended the Watershed meeting in December 2005 and shown an interest on their part for furthering the Independents' initiative. Graziano had since started working with them on aspects of the VisitorStudio project. I arranged a series of interviews with Furtherfield in their studio in an industrial zone of North London to discuss their work [175]. As I arrived in their space on 29 September 2006, a gigantic joystick, over 3 meters tall and just as wide, took-up most of their gallery space as part of a separate collaboration piece. We sat in an adjacent office space/living area to discuss their work.

They explained to me how they had deliberately developed the platform to work on a 56k modem (ie. low bandwidth). VisitorStudio was similar to Access Grid only in that it allowed for synchronous online collaboration between multiple users. Since 2004, Furtherfield and collaborators had designed the platform as a simple web-based interface to allow registered users to upload and share images, video, audio and text in real-time. As the platform's official site described:

> *"Participants upload sound files and still/moving images (jpg, png, mp3, flv, swf) to a shared database, mixing and responding to each other's compositions in real-time. Individuals can also chat with each other and are located in the interface by their own dancing-cursors."[176]*

With a functioning design complete, Furtherfield had begun working with Graziano in developing training programmes and organising initiation events for potential users – mostly community centres and other media arts centres in urban areas of the United Kingdom and in parts of Europe and North America. The two felt that Graziano's previous experiences working with diverse communities in community centres such as THEpUBLIC made him an appropriate coordinator for such initiatives[177].

These kinds of training programmes were possible because of the platform's minimal use of bandwidth but also, arguably, because it substituted certain telematic conventions for more

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[175] See annex 5 for details of participant observation.

[176] See Online research documents: Furtherfield (2006)

[177] I followed Graziano on a project with children at the Bruce Grove community centre in North London on 20 February 2007 and 25 February 2007. He worked with them as a community development project using VisitorStudio platform.

widely available new media standards. Because VisitorStudio was limited to a standard desktop interface, complex physical installations were unnecessary. Arguably, any individual familiar with accessing applications online using a desktop PC and able to access the World Wide Web could learn to use VisitorStudio.

But, for Furtherfield, VisitorStudio's use of certain new media standards did not absolve it from necessary artistic compromises. Their use of Flash to programme much of the interface meant that they were also running contrary to some perceived new media standards:

RC[178] – *"Things like VisitorStudio – when I showed this to [a FLOSS purist] he just says "Oh, I hate shit like this!" [laughs] And it's because it uses a Flash interface, it isn't designed with open code so the code would have to be commented very, very carefully for other people to take it and then modify it and it relies on Flash which is proprietary software and... So it's a "dirty" solution. But for us, it was more important that we provided a platform and that people could have this behaviour than it was to be squeaky clean."*

MG[179] – *"Although everything else we use is free software like PHP for websites..."*

RC – *"When we can..."[180] (Ruth Catlow and Marc Garett, 8 February 2007)*

Here, the two reaffirmed some of Grzesiek's and other MARCEL members' reservations about non-open source products such as Flash (see section 6.3.5 above). However, in their case, non-open source was not so much inflexible or a toaster technology. Rather, it represented one of many new media standards that could be transgressed. Despite these reservations, VisitorStudio's use of well-known new media standards and low bandwidth enabled Furtherfield and Graziano to try to reach new groups of users. Much of this outreach took the form of providing training sessions for users[181] or training sessions for individuals who could provide training for users[182]. For Marc and Ruth, developing a platform that was easily accessible to groups of users was more important than what specific media forms were used. This was, in part, due to the constant changes in new media standards:

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[178] RC will henceforth refer to Ruth Catlow in interview transcripts.

[179] MG will henceforth refer to Marc Garett in interview transcripts.

[180] The second of two interviews with Ruth Catlow and Marc Garett was conducted in their studio in North London, United Kingdom on the 8 February 2007.

[181] See annex 1: MARCEL Archive 00082, Bruce Grove, London, 8 February 2007

[182] See annex 1: MARCEL Archive 00082, Furtherfield studio, London 22 January 2007

RC – "Working in this field as artists you find this all the time that you make work that is innovative but because the technology moves so fast and because of this relationship between technology and capitalism, it's moving at a really fast rate in terms of technological innovation and you just get overtaken all the time. And then the context of what you've done is just completely changed. Which is a big windup!" [laughs]

MG – "But – and that's why it's so important for us to be so well connected to the people who use this stuff because it's very much about their own – their own psychology, their own behaviour again and their relationship as creative people – that in a way informs us – that we're not just making a product and…"

RC – "It's also what gives the work any longevity is a kind of real sense of content that actually means something beyond like new tricks really." (Ruth Catlow and Marc Garett, 8 February 2007)

At first, based on minimal descriptions by MARCEL members and others, VisitorStudio had seemed to me to be the World Wide Web collaborative equivalent of Access Grid. It therefore initially seemed to me that their membership in the Independents working group was of little use to Furtherfield. When I asked why getting connected to high bandwidth would be of any interest, they answered that they could imagine VisitorStudio on high bandwidth, but that this would only be one in many versions of the same work. Their wider interest in the working group lay in the wider social networks that MARCEL represented (they had, after all, met Graziano through MARCEL). The significance of MARCEL, for them, was not so much its technological aspects but for the connection to international academic social networks and to the wider discussions about high bandwidth and its future. For Furtherfield, MARCEL represented a chance to gain access to new contacts, new resources, and new perspectives on their own work and the work of others.

This independent media art organisation's work provided an interesting contrast to the combination of maverickness and experimentation presented to date. Both artists still articulated aspects of maverickness, of wanting to contest established conventions and to seek out innovative practices. But their work deployed maverickness in relation to the everyday as opposed to Don's strategy of 'squatting' expert ICT networks. Their work also suggested a concern for a different kind of user. Much of MARCEL's work had focussed on the artist as an "advanced user" or other more complex designer/user configurations (see, for example, chapter 4). In VisitorStudio's case, the user was not specifically an artist but rather anyone interested in being 'creative'.

6.4.4 Second Independents' meeting

The second independents' meeting took place with the support of the Methods Network on 19 March 2007 in a conference room of the Centre for Computing in the Humanities at King's College London. The meeting was advertised as an Arts and Humanities Research Council ICT Methods Network Seminar called "The Potential of High Speed Networks as a New Space for Cultural Research, Innovation and Production"[183]. The day began with presentations by artists working in the United Kingdom including Kelli Dipple, Ruth Catlow, Paul Sermon and Thor Magnusson about their recent experimentations with real-time collaborative platforms and/or high bandwidth. The afternoon was reserved for open discussions concerning:

"Potential connections and opportunities for new type of research and production with universities, archives, and other institutions

Ways in which the high speed internet technology allows a more "seamless" connection between the artist/researcher/curator/archivist and student.[...]

Research issues, problems, or questions related to the creative process and creative practice involved in the pursuit of creative activities and productions in High Speed Networks."[184]

By the end of the meeting, everyone present asserted their interest in getting connected to the academic high bandwidth but remained hesitant relative to the cost of installing a connection and the future possible projects resulting from the connections. Giles Lane of Proboscis, an independent media arts group in central London, accepted the role of the working group's coordinator. His main objective would be to look into potential funding opportunities and collaborative projects with commercial partners. In a subsequent interview with him, he explained to me that he still felt reservations about the importance of Access Grid for the MARCEL Network despite taking on the working groups coordinator role:

"I don't see that Access Grid is in any way... is anything other than a tool that might assist in a certain articulation for some of MARCEL's objects. So for me, Access Grid and the focus on Access Grid and virtual connections has meant that we've [Proboscis] participated less and less because it's not connected to our work in a meaningful way. So I think

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[183] See annex 1: MARCEL Archive 00092

[184] See annex 1: MARCEL Archive 00092

Access Grid is a bit of a... it has its purposes, but for me it's not interesting, and it's not what we're a part of MARCEL for. And for me, what interests me in MARCEL is its—the things I was saying about kind of capturing and reflecting on the history of the impact of artists—artists and artistic practices in this kind of collaborative area, and also building up a network that shares this knowledge, and helps reinforce it in other areas. Ideally, you also want to create networks because you want to find new partners and new funders, and you know—that's what you've created these networks for."[185](Giles Lane, 14 May 2007)

Here re-emerged the significance of the artist role as a means of classification within MARCEL. In this sense, Access Grid and the high bandwidth academic network were only a part of the wider whole of what interested MARCEL's members. But nor was Access Grid completely ignored outside the MARCEL Network as a potential artistic convention. Other artists working independently from the MARCEL network were also testing its possibilities. On 17 November 2006, I attended a conference at the Ikon Gallery in Birmingham in which artists from the region were meeting to discuss new technological developments for artistic production, one of which was the Access Grid platform. By the end of the discussion concerning Access Grid, one artist presented his own analogy for classifying the platform along the lines of:

"The video is the least interesting. What I like is the possibility to collaborate. Because of the bandwidth, you can do more and work collaboratively in real-time with software online. It's like the steroids of computing online."[186]

6.5 Conclusion

This chapter was constituted an account of multiple collaborative projects which took place prior to and during the MARCEL Network's existence with particular attention to the classification work involved in these collaborations. Section 6.2 identified three types of lists used to classify collaborations among artists such as Don Foresta and Georges-Albert Kisfaludi prior to the creation of the MARCEL Network and leading up to the Souillac meetings: member lists, technical lists and project lists. Sections 6.3 and 6.4 examined in detail two of the projects which were part of the MARCEL Network's activities. Section 6.3 detailed the design of the MARCEL website through document analysis and participant observation of maintenance work for its second version and its subsequent upgrade to a third version. Section 6.4 was an account of attempts to promote Access Grid and high bandwidth as an artistic convention to a

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[185] The interview with Giles Lane was conducted in the Proboscis studio in London, United Kingdom on the 14 May 2007.

[186] See annex 1: MARCEL Archive 00082, Ikon Gallery, Birmingham, 17 November 2007

group of independent United Kingdom arts organisations by members of the MARCEL Network. Now that the three empirical threads have been developed, I rethread them in chapter 7 in order to produce a synthesising analysis in response to the research questions informing this study.

Chapter 7

WEAVING THE THREE THREADS – AN ANALYTICAL MOMENT

7.1 Introduction

In the previous empirical chapters (Chapters 4, 5, and 6), three investigative threads have been developed: 1) a digital information and communication network's career, 2) an artist's career, and 3) an account of a series of collaborative projects as part of the MARCEL Network's activities. In this chapter I weave these empirical threads together in an analytical moment of interpretation that is intended to synthesize and elaborate upon the earlier insights. This chapter is divided into two parts: 1) it recaps the key findings and then addresses how the themes uncovered in the each thread answer the research questions set out at the end of chapter 2 in section 2.5; and 2) it relates these insights to the conceptual framework developed in chapter 2. The principle research questions are:

How do artists design and use digital information and communication networks for the production of artworks?

I) Do artists articulate a conduct of maverickness in relation to networked ICTs? If so, how is it articulated and what are the resulting power dynamics for the production of artworks?

II) How do artists engage with the mediation of digital information and communication networks? Specifically, how do new media standards become meaningful conventions for artists and their art world networks?

III) Does the mediation of networked ICTs by artists in some way enable or constrain the (re)production of maverickness in an art world network? Specifically, are artists able to conduct maverickness in order to contest network standards?

As presented in chapter 3, section 3.6.4, a number of sub-questions were posed within each of the empirical chapters in response to these main research questions.

7.2 Summary of the three empirical threads

In Chapter 2, I suggested that the artist's selection, design, and/or use of a tool for artistic production cannot be understood as an isolated relationship. In the case of the tradition of the

'production of culture', the dissemination and collective success of art worlds is tied to the level of resources and support they are able to secure. Becker (1982: 131-164) states in Art Worlds that conventions developed by an artist or other art world participant need to extend beyond individual work and gain the respect of gatekeepers (Ridgeway 1989) such as critics and patrons in order to persist.. It was unclear, however, how one could secure such support if both the technology and the artist role were to some extent unstable. The previous chapters have examined two career threads, that of an ICT and that of an artist, and analysed the classification process in an art world network. The following summarizes the empirical findings of each thread and develops several thematic openings whereby the threads can be woven into a final moment of analysis.

7.2.1 The Access Grid career thread

By engaging with academic high bandwidth networks, MARCEL artists and others designed and used Access Grid as an art world convention with a focus on producing telematic art. For some, this technology promised to be a resource that enabled artists to design new ways of collaborating and interacting with the artists and users. To a certain extent, Access Grid set these artists apart from artists working with other digital information networks like the World Wide Web, both literally and figuratively. Academic high bandwidth networks such as JANET were designed as expert media forms in which research and collaboration were initially framed as scientific and, later, generally academic, endeavours (see chapter 4, section 4.1). The semi-immersive collaboration described by members of the Futures Laboratory was arguably one that took place between academics and other experts within a research context. As shown in chapter 6, this perception of Access Grid nodes as being part of a discursive space separate from the general public represented a key fault line for the MARCEL members.

In chapter 4 I examined a process of mediation which I referred to as experimentation through the historical construction of the Access Grid's design using four instances of appropriation and conversion. Some actors referred to experimentation explicitly as a means of determining the possible designs and uses for Access Grid as a set of new media standards for videoconferencing and semi-immersive collaboration. I have likened experimentation to Silverstone's conceptualisation of domestication (see chapter 2, section 2.3.5) entailing a three tiered process of commodification, appropriation, and conversion. Experimentation seems similar to domestication in that an unfamiliar ICT design and use is negotiated within and among groups of social actors. But experimentation also seems to entail some significant differences which I discuss here.

In chapter 4, section 4.1 I demonstrated how the Access Grid's design involved a complex weaving together of multiple standards into a media form for the production of videoconfer-

encing and online semi-immersive collaboration that extended into and was integrated with offline spaces. Its design also involved articulating the potential meaning and function of ICTs. In this case, instead of being packaged as a commody, the Access Grid was presented as both a functional means of videoconferencing and, most importantly, as an experimental technology – an extensible ICT for testing connections and developing new modes of online collaboration. The Access Grid circulated within what the research identified as an academic discursive space. Access Grid's standards initially circulated within the social worlds of academic research and new media as a component of technology for testing online connections and collaborations prior to its circulation within an art world. Its design also did not produce a commodity for market exchange because of its circulation as an open source platform.

Access Grid's status as an experimental technology design was all the more evident in the case of Manchester Computing's installation of the first node in the United Kingdom. This represented an example of appropriation by Access Grid's initially intended user group – an academic research department within a university. What followed, however, can be seen as a process of appropriation in which these meanings and functions were appropriated through the situated practices of different groups of users - artists - within the same discursive space. Appropriation was complicated by the meeting of distinct social worlds. The first was that of academic research comprised of the new media social world and its actors who promoted an experimental ICT to a new user group. The second was an art world whose artists were working in the field of telematic art and on new techniques for online collaboration. As a media form, the Access Grid on the high bandwidth academic network was presented as a potential platform for collective collaboration. However, its evolving technical and social status gave it a complex set of relations that did not appear to easily fit into the artists' desires and objectives when these were directed towards the production of telematic art works. The academic high bandwidth network represented a challenge in that its ties to academia – economically, technologically, discursively – were shown to constrain the possibilities for artists to gain access to the network. These constraints took the form of prohibitive costs for connection, the need for expert technical knowledge, and the need for the necessary support or credibility among other social worlds. Despite these challenges, the artists encountered in the research were attracted to the technical possibilities afforded by AG as an emerging experimental ICT. It should be stressed, however, that such an interest was integrated into a wider evaluation and classification process that will be addressed in a later section of this chapter (sections 7.2.2 and 7.2.3).

These observations begin to address the first part of question II, namely, "How do artists engage in the mediation of digital information and communication networks?" I suggest that artists were able to engage with all three stages of mediation in varying and inconsistent ways.

Experimentation therefore can be seen as a process of mediation to influence the arrangement of transparencies of standards pertaining to ICTs, in this case Access Grid as a media form and its related media objects, instances and experiences both online and in the physical installations of Access Grid nodes. In Schaffer's (1989: 67) conceptualisation of transparency, standards in the process of scientific experimentation are made transparent over time in order for scientists to concentrate on the expected results of the experiment itself. Similarly, Star et al. (2003) present transparency as a concept that enables cooperation when designing and using technologies, allowing designers and users to "work together". In this study it seems that levels of transparency in the process of experimentation were, in many cases, contingent and that their mediation – the artists' or other art world actor's ability to create, identify, and modify standards – were a driving factor in initiating the experimentation process itself.

To investigate this further, let us consider two of Star et al.'s initial questions for analysing transparency, "For whom and when is a particular tool transparent?" and "How are new comers taught to make the tool, interface, or retrieval system transparent for themselves?" (Star et al. 2003: 242-243), specifically in the case of artists. To answer the first question, transparency needs to be examined at every unit of analysis of media: i.e. the media form, media object, media instance, and media experience at each stage of experimentation. Overall, one of the principal ways in which the networking standards of Access Grid as a media form were made transparent for artists through mediation was by working with engineers or other actors with relevant expertise. The latter would iron out technical details while artists focused on other aspects of the work without concerning themselves with the "technical details" of the media form. However, as was the case of Streaming Tales (chapter 4, section 4.4.3), much of Access Grid as a media form remained transparent even for artists who did not have access to engineers. In these cases, artists simply worked with the affordances of particular media objects such as video and audio signals. Whereas engineers working within academic organisations who specialised in computing were able to modify the properties of Access Grid as a media form, such as by extending its affordances by modifying its code, not all artists had the same kind of access (see below). Much of the artists' engagement with Access Grid observed in this study took place at the level of changing the properties of the specific aspects of the media objects such as the size and shape of video signals, the volume of sound, the placement of offline objects and lighting within the node. Approached in this way, my analysis runs the risk of overlooking the specificity of the works observed or becoming lost in the particularities of each work. Too avoid this, I now examine transparency in the context of two overarching themes identified in the analysis in the preceding chapters: distance and flexibility.

In chapter 4, section 4.2 I demonstrated how the academic high bandwidth network as a media form was designed in ways that enabled semi-immersive collaboration between distant nodes.

Access Grid was shown to have been designed and used by artists to (re)produce conventions of telematic practice. It was through the reproduction of telematic conventions that certain forms of distance[187] were introduced to artistic design and use of Access Grid as a media object for artistic production. The design of art installations employing conventions of telematic art in general, including those based on Access Grid, necessarily depended on distance. In its most basic form, distance meant a space of a few meters or of many kilometres between two or more connected nodes. Access Grid was designed as a communication tool that allowed individuals to overcome physical distance in order to collaborate or meet 'face to face' without being in the same room. But all of the examples encountered in section 4.4 emphasised transatlantic connections in synchronous communication: large physical distances with minimal temporal distance at the level of media experience for participants. These large physical distances, as stressed by Paul Sermon in his interview, nevertheless, resulted in significant time differences related to time zones. Therefore, distance was not only measured in space but also in time. By connecting two or more points together in real time, these large distances manifested themselves in the artist's work not so much in space but in time, just as in the example of the event between China and the United Kingdom presented by Paul Sermon in section 4.3.1: 'So in actual fact the only times that we would have the possibility to do it together would be early in the morning or late at night for both.' (Paul Sermon, 13 July 2007). The difference in time zones represented an added challenge when coordinating connections – as in the account of my first use of Access Grid in section 4.4.1 where meetings had to be timed to accommodate participants in multiple continents. This synchronous temporal distance was not simply due to limits in Access Grid's affordances. One could upload content on Access Grid in ways that could be accessed asynchronously but, during my field work, none of these techniques were employed by artists. This was consistent with the conventions of synchronicity in telematic art presented in 4.3.1.

The importance of temporal distance suggests a further examination of the production and mediation of media instances. The encounters and other examples presented chapter 4 (sections 4.2 to 4.4) could be categorised along a sliding scale between extremes of media instances: those designed with the temporal convention of an exception and those designed within a more open-ended convention of open time. The exceptional instances had a set beginning, a middle, and an end that were known to all participants. A good example of this was Kelli Dipple's Navigating Gravity in which audiences were invited to view a specific live per-

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[187] tele- defined by the Oxford English Dictionary as "[...] afar, far off; used in numerous (chiefly recent) scientific and technical terms, mostly denoting or connected with special appliances or methods for operating over long distances; also in several terms connected with psychical research, denoting actions or impressions produced at a distance from the exciting cause, independently of the normal means of communication."

formance taking place at a certain time. Melt and Telematic Dreaming, for example, depended on the opening hours of the galleries that contained the different nodes of the artwork and would end once the galleries closed the respective exhibits. The open instances depended on more transparent social norms for meeting online without explicit objectives or a planned beginning and end. In this sense, the distinction between open and exceptional instances pointed, to some extent, to the distinction between instances of appropriation, in which the artist spent time learning to use Access Grid, and moments of conversion, in which the artist represented Access Grid's design and use to others.

In both cases, temporal distance resonated within a larger, organisational distance between connected points. Here I understand organisational distance as the differences between/ within similar discursive spaces such as between two academic conference rooms in two distinct academic organisations. In order to choose one or both of the two conventions for open and exceptional media instances, artists had to ensure that this was possible within the organisations that managed the space. Graziano Milano's description of gaining access to Access Grid and the high bandwidth network at Wimbledon School of Art (section 4.3.3) was instructive of the organisation of time around access. Having the keys to an out-of-the-way room at Wimbledon suggested that 'playing' with Access Grid was not a fixed exceptional time. Instead, the time spent learning to use Access Grid and deciding how to use it was embedded in a physical and organisational space that enabled fluid temporal engagement with the technology – the Wimbledon School of Art's Research Centre with funding from the AHRB.

Interestingly, this temporal dimension of the work of appropriating the technology harkens back to the issue of control in Silverstone's work on teleworking. Based on his findings in collaboration with Haddon (Haddon and Silverstone 1995), he identified the contribution of organisational politics in both the home and the workplace to appropriate new technologies. In that case, bringing home a new technology to enable work did not necessarily change the politics of the home. In this case, the initial context was reversed in that the technology was located within an expert discursive space: the principle space for artists to conduct experimentation with Access Grid identified in this study was the academic space of the office or conference room. One might initially assume that its appropriation was a simple case of artists attempting to develop new uses for Access Grid within a discursive academic space. Based on Graziano Milano's account, however, the Wimbledon School of Art did not seem to provide an explicit organisational framing to the appropriation of Access Grid other than to 'give them the keys' to the research lab. On the surface, such an open offer represented a particular kind of non-engagement on the part of Wimbledon for the appropriation of Access Grid. In chapter 5.7.3 I related how Don Foresta and the independent research support team's work in the Wimbledon School of Art's research laboratory consisted of promoting high bandwidth and

Access Grid. In this specific case, the politics of the School remained relatively unchanged as the team conducted its experiments, leaving the team's work as an excluded exception within the established temporal structure of the academic year. Here re-emerges the issue of time, suggesting that its rhythms and control were closely linked to organisational practices. MAR-CEL's work at the Wimbledon School of Art remained an exceptional experiment for the School, one that was never fully integrated into its daily expert work as an academic institution. This suggests that the artist's ability to design media instances with Access Grid did not necessarily result in a change of organisational politics in the School.

Similarly, the coordination of time was a key factor in the case of Kelli Dipple's work with Manchester Computing and other universities as discussed in section 4.4.2. The negotiation of time between the artist and the organisations that controlled the nodes was not only tied to the instance of the performance itself, but to the preparation and rehearsal time also. Throughout the process of experimentation with telematic conventions of distance in the works there needed to be someone present in the other nodes to execute the artist's designs. The artist's control over time could not only be limited to one node but had to be extended to all of those participating in the collaboration. Such control over time enabled the artist to take on a designer role in relation to media instances. The artist could not simply depend on temporal standards/conventions (for example: opening and closing times of galleries) to find common time and coordinate between the organisational distances between nodes. She could, however, depend on the various organisations temporarily ceding control over the coordination of these instances in order for the experimentation to take place, a control which would subsequently be reacquired thereby returning to the routine practices surrounding the node's use for videoconferencing.

The inter-related mediation of distance in time and organisational distance suggests the mediation of a particular kind of transparency. When temporal distances – at an experiential, organisational, and even national or international scale – were limited, the design, appropriation and conversion of these media instances remained relatively transparent, particularly in the cases of open media instances. When temporal distances were prevalent, artists had to work considerably in order to find ways of overcoming or minimising such issues, thereby making them "transparent for themselves".

But distance was not only something to be overcome. Once the process of conversion – in which Access Grid's design and use was presented to others as telematic artworks – was engaged, some cases of distance could become desirable for the artist. Access Grid's initial design focussed on minimising the challenge of distance between research centres and academic departments by facilitating videoconferencing and semi-immersive collaboration. For some

artists, particularly in Melt, the representation of distance as a credible part of the user's experience was integral to its successful conversion as an artwork. In this sense, Melt complicated Bolter and Grusin's conceptualization of telepresence as a media form that is "highly mediated" while still "supposed to be transparent, in the sense that it should transmit a view to the human operator and allow the operator to interact "naturally" with what she sees" (Bolter and Grusin 2000: 215). Although the artist wanted the user to experience mediation in the work, the characteristics of this mediation - specifically how the user experienced distance – was part of her objective. Although Melt "celebrate[d] the reality of its own mediation" (Bolter and Grusin 2000: 215) as the authors suggest of telepresence installations, such a mediation was not uniform. What was evidently mediated for the user and what remained transparent to the user through the artists' conversion of the platform represented a challenge that could not be entirely controlled in this particular artwork. It was only by continually returning to a process of trial and error in open time, as in the case of Streaming Tales (sections 4.4.3 and 6.4.2), that some of the artists were able to conceive a desired conversion and modify their design accordingly. Nevertheless, based on the findings of the encounters first presented in chapter 4, artists' conversion of Access Grid into a set of art world conventions for the representation/minimisation of distance, be it temporal or organisational, were exceptional. Most of the Access Grid nodes (with the temporary exclusion of THEpUBLIC and the BNMI, (see sections 4.4.3 and 4.4.4 respectively) existed within academic discursive spaces. Because of these academic ties, experimentation seems all the more appropriate to describe this process of mediation: Access Grid was never entirely converted, remaining in a recursive state of contingent design, appropriation and conversion. Even within the academic spaces, particularly in those whose focus was artistic work, Access Grid was not deeply embedded into the organisational structure – leaving the technology "at a distance" from the organisation's day to day operations.

Another aspect revealed by the analysis of the fieldwork data that calls for a more complicated analysis of telepresence than that provided by Bolter and Grusin was apparent in the artists' process of conversion for exceptional instances. Many of the works produced involved the production of transparency of media objects for the audience's media experience. Artists expressed the desire to keep media objects such as the "windows" that surrounded video outputs that usually appeared in Access Grid's basic videoconferencing interface hidden from the user. (With the exception of Streaming Tales, although the artists' plans for the installation suggest this was an early objective that had to be discarded for practical reasons.) Similarly, keyboards were not made available to users nor were the Access Grid interfaces and the option to navigate to other virtual venues made available to users. Such modifications suggested that the artists wanted to design a certain levels of constraint between the user's media experi-

ence of Access Grid's media form as experienced by the artists themselves. As suggested above, it was the possibility to alter the transparencies of certain media units that made Access Grid attractive to artists in the first place. I refer to how Access Grid was suited/made to be suited to such alterations as flexibility. Flexibility is here related to socio-technical and cultural affordances (Gibson 1977) of media form, object, instance, for altering standards. It was the capacity to "do what I want" for artists from the point of view of standards of design or use/consumption. Certain standards relating to Access Grid led some to consider it as either flexible or inflexible. The rest of this section examines these variations of flexibility in more detail.

The flexibility provided by Access Grid's initial design as a tool for semi-immersive collaboration was well summed up by the "grill" and "toaster" analogy offered by Mike Daw (section 4.4.2). By using well-known, open source software that could be modified over widely available hardware, Access Grid as a set of standards provided access to many affordances: IP multicasting, control over multiple video and audio streams, integration of other applications. But this kind of flexibility depended to a large extent on the degree of expertise at one's disposal. This was reflected in the difference between Access Grid as a grill and Skype as a toaster. Based on observations in the field, Access Grid was ideal to support designer roles relating to the production of semi-immersive collaboration and telematic experience because individuals with the right knowhow were able to choose and produce some characteristics of the media form as well as its objects and instances. For example, artists could use Pure Data patches with Access Grid to modify and edit video signals (section 4.4.1). But this flexibility was not isolated to Access Grid on its own. This could be described as Access Grid's "extensibility" – how well it was able to work with other applications in order to extend its standards. Extensibility depended on Access Grid's capacity to be adapted to or absorb other applications and also to enable the addition of multiple media objects in the offline environment such as additional projectors or sound systems. Access Grid's extensibility also depended on having the right connection and security settings in order to gain a stable IP multicast high bandwidth connection which, at the time when most of these works were produced, was mostly only available from within academic or other research institutions. Extensibility was therefore embedded within a set of other technical and social layers only available to those who had gained the necessary expert knowledge and had access to the resources needed to purchase all of the hardware. Nevertheless, if one had gained access to all of the requirements, working with such media forms ensured greater control over aspects of the form's design and use.

A similar "toaster" videoconferencing application such as Skype, although more widely available and inexpensive, considerably limited an actor's ability to modify the properties of any media units because of its status as a proprietary, and therefore user/consumer oriented, ap-

plication. Skype was therefore perceived in this study as less experimental because of its less extensible status and closer ties to supporting user roles. Its status as everyday, proprietary software was opposed to a "grill" technology like Access Grid that was open source and therefore extensible. But such a status did not preclude Skype from being "hacked" in order to create the desired design. Although not encountered directly in this research, some artists related experiments with hacking applications – illegally modifying the code of a media form – such as Skype in order to design the desired results. Hacking had significant advantages and complications. In many cases, hacking seemed to be based on ubiquity and disposability. Skype was perceived by actors in this study as a commodified media form that could circulate rapidly and whose standards were more readily available. This meant that it could provide things like videoconferencing with less of a technical, economic or social cost which, in turn, seemed to reinforce the notion among the artists encountered during this research that working with a single media form as a convention was a bad investment. The career trajectories of a single media form would 'inevitably' be surpassed by newer, cheaper, innovations. (Oddly enough, it was this same logic of 'inevitable' market transformations that lead the Futures Lab to design Access Grid in the way they did (see section 4.2.2).) Expending energy on designing extensible media forms was not only difficult for the reasons outlined above, it could also lead to being "left behind" relative to the new media standards. Hacking a toaster technology not only meant "hedging ones bets" that the technology would one day be obsolete, it also fit in nicely with a "hacker" maverickness – challenging commercial interests and striving to ensure a particular kind of "freedom to create" (Castells 2001: 46). In cases such as VisitorStudio's use of Flash, artists were almost apologetic about using proprietary software without a significant degree of hacking. But the disadvantage with such an approach was that it also pushed the resulting media objects to the periphery of legal practices. In some cases, however, these mixes came into conflict. This seemed to be particularly the case between open source and proprietary software as in the case and Unreal gaming engine (section 5.7.3).

Access Grid did not represent the 'perfect' tool for the production of telematic artworks, its embeddedness within academic computing departments and pedigree as an experimental platform for computing research and collaboration also provided significant rhetorical support for the promotion of the MARCEL Network as an art world network conducting maverickness. Nevertheless, the more Access Grid and other technologies that provided similar media experiences became ubiquitous, the less they represented an asset to those whose reputation depended on trying to stake an early claim on emerging ICTs. The overall transparency of high bandwidth was articulated along similar lines. As connections became more stable, less costly or artists gained consistent access to/or no longer required IT support for enabling connections outside academic discursive spaces, high bandwidth appeared to be-

come less of a concern and therefore more transparent. Artists could steer their attention away from the challenges of using the high bandwidth academic network and focus on the formal and social aspects of designing the media objects, instances, and experiences instead.

Another instance of flexibility was epitomised in the variable use of the "black box" analogy as both toaster and grill. Artists and engineers in telematics expressed the black box (space) as the ultimate in flexibility, similar to the theatrical black box, instead of referring to the black box as employed in science and technology studies to describe an object which hides its workings. Most offline spatial arrangements for Access Grid nodes were designed with the standards of conference rooms and used for meetings. Use of multicasting, until recently, restricted the number of potential locations where events could take place. It was therefore understandable that the theatrical black box, in which spatial arrangements could be easily modified and with a greater degree of control, was deemed to be more flexible than a standard conference room layout. Here again, a black box opened up the opportunity for the artist to play a designer role – defining the offline affordances of the node. However, when the artists at the University of Maine (section 4.4.3) considered how Access Grid's installation in a black box related to its intended users, they decided it was no longer a positive quality. When an organisation such as the University of Manchester allowed an artist to redesign its Access Grid node for Navigating Gravity, it was perceived as "disruptive" and "shaking things up" (section 4.4.2) because the Access Grid node was usually only available for standardised videoconferencing or scientific research. Both of these examples suggest similar themes for the physical space in which Access Grid was designed and used as those identified for media instances above – namely open space and exceptional space. Spaces such as "black boxes" and conference rooms essentially functioned as transparent spaces for artists or engineers to experiment. In the case of the black box, this was possible because of how it allowed the artists to physically alter the space depending on what he or she felt was necessary – the space for the artists became functional. For engineers, conference rooms played a similar role in that it provided a comfortable, flexible physical space for collaboration. But when the artist came to the point of producing the telematic event itself, both open spaces became relatively constraining.

In the case of Navigating Gravity, the temporary transformation of the space was only possible because of organisational support by the team at Manchester Computing and the other Universities that collaborated in the event. All nodes in the installation were physically modified to accommodate the artist's particular vision for the event. The time and the space, the media forms and the media instances, needed to make such an event happen depended on the organisational flexibility of not only one university but two or more. Without someone at the other end to execute the designs for spatial arrangements, the artist would have had to infer what

spatial standards were most likely be in place: based on the observations in this study, these would more than likely include conference rooms or desktop setups using PIGs. Based on the observation of Access Grid nodes, the "standard" conference room setup for Access Grid nodes was itself fairly un-standardised (section 4.4.1): the number, shape and size of screens, for example, were not consistently applied. The flexible affordances provided by Access Grid's extensibility in effect made it difficult for an individual, be it an artist or otherwise, to infer the exact spatial properties of other Access Grid nodes without direct contact with each participating node. In this sense, flexibility compounded organisational distance between nodes through non-standardised spatial arrangements.

Rather than semi-immersive collaboration in fixed locations, some artists interviewed for this study using Access Grid for telematic works expressed the desire to experiment at the level of media experience: finding new locations for telematic events, designing nodes' offline spatial arrangements using other conventions such as those of dance studios, galleries, and even dinner tables. This was the case for Streaming Tales. Although the open space of the theatre at the University of Maine afforded the artists with the chance to experiment with the media form, it limited the meaningful design of a space for the audience they wished to engage. The careers of many Access Grid nodes as spaces for artistic production were therefore short-lived, only lasting the duration of preparation and presentation of each specific event. In such cases, simple and inexpensive 'toaster' technologies, although more limited and only recently available, were better suited for such events. Access Grid's design for permanence in the university context seemed to work against it for artistic use while its prohibitive cost and technical complexity made the construction of new nodes outside the academic sector difficult for artists and arts organisations. As was shown in chapter 4 and 6, more traditional and well-established arts organisations or academic organisations that focussed on art were unable or unwilling to provide sufficiently "up-to-date" and sophisticated contexts for the early appropriation of Access Grid over the academic high bandwidth network. For artists, these appropriations often needed to be done on a peripheral (at home, on your free time) basis.

Flexibility with Access Grid could therefore also be extended to the artist's conceptualisation of the audience/user's media experience. For example, other artists experimenting with videoconferencing for producing telematic artworks chose not to use a platform designed with IP Multicasting because it "required that users identify themselves prior to the event, precluding spontaneous interactions by those fortuitously browsing" (Knott 2001: 13). As has been shown above developing a telematic work with Access Grid implied mobilising certain temporal and spatial standards that extended beyond the desktop format. Designing experiences with an Access Grid node afforded an artist with potentially many different spatial arrangements. But again, this flexibility depended on the artist gaining access to and control

over the resources needed to modify more than one Access Grid node. Conversion of Access Grid by the artist did not have to be uniquely directed to distant audience-users or everyday users. As in the case of Navigating Gravity, engineers constituted one of the intended audiences. The artist's contention of standards made these same standards un-transparent to engineers during the process of appropriation. Such contention was viewed by those same engineers as a positive outcome. The question of flexibility of Access Grid nodes brings about a tension among the artists' practices relating to telematic and other ICT related collaborative artworks. Among the artists interviewed for this study, some expressed the need to explore or produce exceptional spaces while others expressed the need to have consistent, open spaces for production and experimentation: the difference between the flexibility to select spaces for artistic production or designing flexible spaces for artistic production. In either case, one artist's grill was another artist's toaster.

What was arguably at stake in these shifting transparencies of media units in space and time was the articulation of the ICT's function and meaning within the art world network. The media units targeted by artists in order to "do what they wanted" were not uniform in focus or intent. As was shown in chapters 4 and 5 and will be argued in sections 7.2.3 and 7.2.4 below, the politics of high bandwidth and control over its space played a significant role in defining the artist's role. Although aspects of Access Grid's media form – its networking protocols for example – remained transparent, artists were able to develop designer roles at other levels of media units, particularly media instances and the offline media objects of Access Grid nodes. But, by the end of the field work for this study, it was still unclear whether Access Grid and academic high bandwidth, in the long term, would develop into a significant art world convention for artists who produce telematic artworks and other art world actors. Arguably, such a future depends on the ongoing experimentation with distance and flexibility as developed in this section.

Although experimentation was employed among the agents encountered during the course of this study, in this context, it was used to describe a particular kind of mediation work with ICTs which combined design/production and use/consumption roles and within discursive spaces over time and space. Such work was not individual nor was it independent of technological and social developments. Part of the experimentation process observed in the encounters during this study hinged on the negotiation of power relations relating to the artist's role – ensuring that the role was not only limited to the appropriation and conversion work of a user, but also developing designer roles for particular media units. As these power relations emerged, the artist was shown to have been able to conduct maverickness as a discursive technology, contesting and mixing together established or new conventions. In each encounter, the artist was found to be distant from the organisation in which he or she operated; conver-

sions remaining, for the most part, exceptional instances. By constructing a career that continually contested or questioned established new media standards or other normative rules (e.g. everyday life of sitting at the dinner table), artists could convert their work within an art world as artworks.

7.2.2 Don Foresta's career thread

In the case of the artist's thread, I investigated the articulation of the artist's role and its relation to ICTs in chapter 5. Close historical examination of the artist's career suggested that the artist's role was contingent (du Gay 1996: 4-5) and unstable for the individual. Don Foresta was shown to have articulated the contention of certain conventions and standards through a particular form of discursive conduct, what I have called maverickness. Such conduct was presented as being closely tied to the work of being an artist.

What was arguably significant in the earlier part of Don's articulation was his construction of what I would call a "contestable", or "anti-" art world. For Don, the set of values embodied in conventions and standards in the television world should be challenged because of their 'exclusion' of artistic agency. Artists from art worlds using video or any other media form were not invited to shape television's art world conventions. A closer examination of this argument suggested that his work sought to articulate a generalised set of "straw man" art world conventions for television related to everyday entertainment. Through his published works and interviews in the sample, as well as his work as a curator and artist, Don classified a set of standards in order to contest them as conventions: by designating broadcast television as a media form from which the artist was excluded. Constructing this constrained and constraining art world, in turn, enabled the production of its rival. In this way, artists working with video could deploy maverickness to produce a new set of power relations. As discussed in chapter 2, maverickness suggested the possibility that Don, among others, would be able to fashion a discursive dialectic between worlds – opposing broadcast television, the 'box', to video art and subjective artistic practice in general. But nor did Don present the video art world as completely independent from broadcast television (Foresta 1980). Rather, video art was classified as a parallel media form enabling a "subjective" agency – mostly referred to as experimentation – that would provide artists with "limitless" possibilities in contrast to those afforded by commercial television. By working to classify competing art worlds – broadcast television and video art – art world conventions surrounding experimentation with video as a media form could be articulated as conducting maverickness to other art world actors including artists and potential stakeholders like curators, audiences and universities (see section below). Without television, video art arguably could not have been articulated in such a manner.

One might be tempted to explain Don's critical engagement with the conventions of an art world structure such as broadcast television in order to co-create competing conventions through Scott Lash's structural reflexivity (Lash 1994). Employing this line of reasoning, Don is "set free form the constraints of social structure" in order to reflect "on the 'rules' and 'resources' of such structure" and "on agency's social conditions of existence" (Lash 1994: 115). However, Don's arguments attributed a great deal of importance to the artist as a central agent in the design and use of media forms. His contestable art world is employed as a discursive technology for the articulation of a video art world – one where the artist regains a central role in its production. In the texts analysed for this study, Don articulated the video art world as being more creative and innovative than the television art world because of this very fact. But who or what was an artist?[188] Don's use of the term clearly contrasted with Lash's modern reflexive subject. Don's reflexive understanding of either art world was not entirely set free of the constraints of the socio-cultural in that he attributed importance to what was an historically constructed form of agency, one imbued with the potential to contest and transform existing conventions: the maverick artist. Although I will suggest later in this chapter that there was an element of self-reflexive monitoring on Don's part, this reflexivity seemed to be embedded within the well-established discursive conduct of what this research calls maverickness.

Don's frustration with the exclusion of the artist and related conventions from television networks as a media form and commercial and public television as a whole was converted into the production of a parallel art world in which individual artistic agency would hopefully be secured. The work of articulating the media form as a competing convention to its design and use as another art world convention supported the articulation of the artist role in prescribing the conduct of maverickness. Maverickness afforded a key resource for his artistic career: the artist's ability to identify and articulate points of contention that in turn suggested new directions for the design and use of the media form.

Later in his career, as in the quote in section 5.2, Don referred to video as a media form and the video art world in order to illustrate his views on emerging ICTs. These revisions were not to temper his attacks on television but rather to argue that avant-garde art worlds were too late in accepting and integrating video as an art world convention (see section 5.2). Their inability to appropriate video, he argued, had only precipitated the television art world's domination of the media form. He also referred to video art media forms to distinguish between early video artists who were too satisfied with playing with its technological properties and quirks from those artists who were interested in its potential to create "meaningful artworks" (See chapter

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[188] De Duve asks analyses how this same question was already being asked at the time by many working in the avant-garde art worlds of Europe and North-America. (De Duve 1997)

6) - an argument similar to the one formulated in Crane's analysis of certain American 20th century art world networks (see section 2.2.5 for an overview).

Don's brand of maverickness was articulated in specific ways such as in his book, Mondes Multiples. An assessment of the complexity and diversity of these arguments extends beyond the scope of this study. However, it is worth comparing the book to similar arguments about the relationship between the artist and the scientist that had been elaborated within many different artistic disciplines since at least the late 1960s (Crane 1987: 54). Crane's sociological investigations into stylistic art world developments made similar claims to what could be labelled as "paradigmatic shifts" in artistic work (Crane 1987: 141). One can trace an influence of Thomas Kuhn's work in both Crane (1987: 44) (see also Peterson and Anand (2004: 322) as well as Zolberg (1989:327-328) and DiMaggio (2000) for a discussion of Kuhnian influence on the production of culture tradition) and Don Foresta (section 5.6.1)). But whereas her research focused on an empirical analysis of stylistic shifts in artistic production within specific social networks, Don's reach extended towards a programmatic articulation of the artist role. Technological maverickness for artistic production in Crane's work became a constraint, or worse, for sustaining art world network activity (Crane 1987:141). For Don, the affordances and constraints of technology operated from within a relational network of multiple social worlds. He constructed wider socio-technological change and development as an inevitability to be dealt with by the artist. Technology and our contemporary means of perceiving reality were inextricably linked, and the artist's role was to explore the potential for new and emerging technologies as perceptual tools through/for self expression beyond a particular art world – to experiment.

It should be noted that Don's specific use of the term 'experiment' was both different from and similar to the one developed in the previous section. Experimentation, he argued, was made possible through the three stages of the artist's work with ICTs. If one were to reformulate Don's model of experimentation in the light of the conceptual framework set out in chapter 2 (section 2.5), the artist's relationship with a new technology progressively shifted from a stage wherein the artist assumed the role of the user of technology – tentatively appropriating and converting its properties for the production of artworks – to one where the artist assumed a designer role. The user role did not disappear in this model, instead, it was classified as the preliminary stage from which the artist could grow to eventually master a technology and assume a designer role. It was a progression that characterised Don's theory of experimentation as a form of creative power relative to ICT standards. In this sense, Don presented a specific orientation for the artist's role within the process of experimentation. Assuming a designer role equated to the expression of a kind of power over the technology rather than guiding, articulating, the technology through use. Such a representation of the power of the artist ar-

guably aspired to a kind of masculine command of the media form and object[189]. The artist actively set out to contest established technical standards and related convention because the inverse equated to passively submitting to ICT's service of "predetermined human needs" (Foresta 1991a: 132, author's translation) ; what seemed to be the perceptual drudgery and the technically unimaginative everyday work typified by Don's interpretation of the television art world. One can therefore understand how the constraints of an established media form such as broadcast television or the financially prohibitive cost of online connections were projected as obstructions to artistic creation: they constituted finite sets of potential affordances because of their ties to existing conventions and standards. Don's definition of the artist placed the role squarely between the media form's design and its appropriation into social worlds. The artist represented a bridge between new media standards and their circulation in everyday life prior to their appropriation. In order to grow from user to designer, the artist had to be able to design and appropriate ICTs before the market or governments imposed their own constraints, before other social world actors could affix meanings and uses to them.

In chapters 2 and 3, I argued that it would be difficult to apply conceptual metastructures such as networks in this research, in part, because of how art world actors also used these terms in their own situated work. This section has already discussed this challenge in the diverging articulation of paradigmatic shifts and experimentation. Similarly, the conceptual application of worlds to the study of cultural production and use/consumption, such as in Becker's use of the Art worlds, cannot simply be treated as an equivalent to Don's use of the term Mondes (French for Worlds) in his book. Yet there does seem to be a conceptual parallel between the two. It is based on an understanding of the artist's place within the social world, specifically as it pertains to the artist's ability to control the production of artworks and how it is partly dependent on the infrastructural relations that enable and constrain work. But whereas Becker's symbolic interactionist–inspired placement is a methodological choice to help him analyse the meaningful construction of meaning, Don's was a prescriptive placement. The latter appealed for artistic work to be treated as open-ended scientific research in an attempt to justify the production of a socio-technological infrastructure that would empower the artist to contest the same infrastructure. Don's designation of the artist at the centre of the Monde produced a similar, albeit distinctive, result from Becker's art world: the artist was articulated as an individual who should be able to construct meaning and relationships without the constraints of surrounding power relations. Unlike Becker, the artist was imbued with the capacity, even the duty, to perform maverickness. Don's view could therefore be submitted to a critique similar to the one levelled on symbolic interactionists by Du Gay (section 2.2.3) that too much importance was given to an individual, unrestricted agent within the social world. Put into practice,

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[189] It is telling to note that all but two of the engineers encountered in this research were male.

such an articulation may explain Don and Georges-Albert's desire to avoid "doing the same thing" (section 5.5 and 5.7) – arguably a marker of maverickness. Maverickness was deployed as a resource for generating the new and avoiding routine, bringing value to their artistic practice. Despite their decisions to move from the cadavres exquis to video and dance online, they still felt that the interrelated standards/conventions that enabled their work were too repetitive. This desire then informed Don's choice to shift from organising punctual exceptional events to a quest for a permanent open online network for artistic experimentation.

So far, I have analysed Don's articulation of the relationship of the artist to surrounding social worlds and the standards/conventions therein as being consistent with the conduct of maverickness. As presented above, however, such an articulation also demonstrated distinctive specificities that were particular to his focus on media form. Such specificities came through particularly in his recasting of Mondes as space, as well as the practice of squatting.

A new geometry, Don and his collaborators argued (section 5.6.1 and 5.7), was needed to understand this increasingly complex space. Although theorists from Marshall McLuhan (Gow 2001) to Castells (1996) have used space to refer to ICT media forms, space's application in this case seemed particularly fitting for a number of reasons. Firstly, because geometrical analogies tied in elegantly with Don's arguments taken from the world of physics and mathematics strengthening the ties he wished to establish between art and science. Secondly, Don's engagement with digital ICT networks had a strong offline spatial component in part tied to the telematic conventions used for the production of artworks (see section 4.3.1 for a discussion of telematics). To a certain extent, a permanent ICT infrastructure was only possible through a parallel conceptualisation of where the infrastructure would be physically accessed from. A third reason why the spatial analogy was appropriate to Don's conceptualisation of ICT media forms was that space allowed him to clearly articulate dynamics of power, similar to Castells' networking power (see section 2.4), concerning the relationship between artists and media forms. Space in this case implied physical limitations for presence. Using it to describe media forms refined his portrayal of ICTs as not merely constraining and enabling for artistic agency but as environments from which one could be physically excluded (as in his articulation of the television art world). With the help of others, Don began formulating a representation of the technological infrastructure through a spatial metaphor. One could be "inside" the space or "outside" the space. His spatial metaphor in itself generated boundaries for media forms and the social worlds in which they were designed and used. He was not simply articulating an artist's role, he was articulating a role, a media form, and the relationship between the two. The analogy of Mondes, when applied to media form, was too nebulous[190] for the

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[190] See Becker and Pessin (2006) for a similar discussion about the strengths and weaknesses of world analogies compared to spatial analogies of the field.

clear relationships he wished to articulate. Don and his colleagues deployed a spatial analogy to describe relations of power between the artist as a "subjective individual" and his relation to emerging media forms. In their case, however, the artist was the essential vehicle who would carry the communication space from its formal properties into the social world.

Taken together, Don's representation of the artist's role and of the media form as space could be articulated into a situated type of mavercikness – squatting. Squatting implied occupying a media form that was not one's own; almost an unwelcome or secret residence. Squatting also implied a necessary or pressing occupation, one on which the squatter's survival depended. Temporally it was an occupation in the hopes of appropriating the space in the long run, of usurping a part of its ownership and pre-empting any other occupation. Rather than constructing an habitable media form for the artist by the artist, I would argue that Don hoped to construct a type of artist's role that could, in turn, inhabit any media form in order to determine its conventions. He constructed an artist on the network as an enabled, multi-capable individual.

A criticism levelled at du Gay's work on conduct of conduct is its conceptualisation of agency as being overly determined and not leaving enough place for individual agency (Fournier and Grey 1999). Although Don never explicitly referred to maverickness, his later articulation of squatting was an illustration of a situated conduct of maverickness that was not simply determined by outside forces. It was a resistance to the perceived constraints of hegemonic/ ubiquitous technologies that was, nevertheless, inscribed in well-established artistic discourses that could not be sustained alone. In Don's case, the process of experimentation identified in the research was therefore nurtured by a shared conception of what it was to conduct oneself as an artist in relation to media forms, whether one assumed that role or not.

Squatting also had a temporal dimension linked to the establishment of convention relative to wider flows of new media change and innovation. Here, art's relationship to media forms was presented as unsynchronized: artists came too late to past media forms and therefore were excluded. By being part of the research and development and assuming a designer role in the early stages of a media form's emergence – being ahead of the curve, if you will – artists could have greater creative power. As developed in chapter 2, maverickness does not necessarily have to be directed towards technology or identifying and constructing media forms in contrast to other existing media forms. However, as squatting, maverickness was articulated as a continual struggle to subjectively develop and contest conventions and standards of media forms through individual and collective artistic work. In order to 'squat', one had to continually search for and produce what I refer to as maverickness. Specifically, for Don this meant designing and using ICTs whose status as a media form consisted of a "vacuum which leaves

everything to be invented" (Foresta and Mergier 1994: 87, author's translation[191]). A conceptualisation of new ICTs as leaving "everything to be invented" conveyed the freedom of a blank canvas. New digital media forms were constructed as "blank pages" where embryonic sets of standards could more easily be mediated and, subsequently, classified as art world conventions without being bullied into everyday commercial habits or other such concerns. Such an approach was therefore arguably well suited to technologies such as Access Grid whose design and use was itself deemed experimental (see section 7.2.1).

Nevertheless, ascribing maverickness to a particular kind of conduct of the artist in relation to ICT development generated a paradox in that the artist's continued and unrestrained subjectivity was dependent on the development and dissemination of technological standards as well as the articulation of conventions for the artistic practice of maverickness itself. Working with Access Grid did not exempt an artist from the flow of technological or organisational change or from the discursive spaces and other social worlds that mediated access to its nodes. In a sense, the emphasis of form over other aspects of media was a means of negotiating the flows of technological change. And so, the struggle for an online digital artists' space was, at times, a struggle to overcome and control technological and social flows. But this was dependent on an articulation of the artist that privileged the role of designer over empowered user. As Don promoted Access Grid as a platform that provided a 'maximum experimentation' he was in fact arguably promoting a set of conventions for maximising artistic capabilities embodied in squatting – a situated version of maverickness that was not entirely shared by his collaborators as shown in chapter 6.

Don's participation in the creation of the MARCEL network also continued his shift away from his early dialectical opposition between broadcast television and video art in that it was not explicitly created in opposition to an existing art world model. As was demonstrated in section 6.2.4 and 6.3, concrete objectives were formulated for the network that did not depend on contrasting contention of established conventions. Instead of critiquing an existing art world through the creation of a similar yet separate art world, MARCEL was an attempt to pre-emptively produce an art world network using digital information networks. One could therefore argue that it was still, to some extent, designed in dialectical opposition to established media forms such as those of commercial networks. But Don's view of digital high bandwidth was of an open, blank space that needed to be squatted. Already, worries about the development of digital information networks voiced in the European Commission report (Don et al. 1995) suggested that a space had to be created for artistic work. Similarly, those

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[191] The exact quote in French reads as follows: "Une situation d'innovation technique est caractérisée par *un vide qui fait que tout reste à inventer*. " (Foresta and Mergier 1994: 87, author's italics)

who helped to organise the Souillac Meetings expressed their worry that the emerging network would not have the content it needed.

Articulated as squatting, maverickness for the to design and use of media forms for the production of art, was deployed as a means of anticipating future developments of ICTs, dependent on the ICT's diffusion as a network standard. Rather than a synchronicity with the flow of technological development it was an attempt to pre-emptively appropriate an ICT before its standardisation. However, with this came the risk of "betting on the wrong horse". Conversely, the more high bandwidth became transparent (see previous section) the less it became urgent, and rewarding, to "squat" it.

Comparing the artist's career to that of Access Grid, one can identify a number of converging or complementary meanings that extended beyond the simple conventions of telematic art. Access Grid's status as an experimental platform within an academic discursive space made it a suitable candidate as a "blank page" for squatting. Access Grid meshed will with Don's articulation of the artist's relationship to media forms, particularly as one that supported open spatial and temporal appropriation and conversion. But as Rosalyn Krauss (1981) suggests, attempts in the 20th Century to produce innovation using blank canvases led a number of artists to repeat long established conventions. In the same way that she identified how the form of the "grid" was presented as a modernist technique for achieving innovation on canvas by avant-garde artists despite its well-established use as a convention in previous art worlds, Access Grid's conversion as a new media form for artists at the very least reproduced established conventions of telematic art. Taken one step further, Don could perceive Access Grid as a blank page because both he and it worked within a similar discursive space of scientific and academic experimentation. One could therefore argue that Don's initial interest in Access Grid was not only tied to its innovative status as a media form, but also that it represented a flexible open media form whose design had been initially developed within a scientific and academic discursive space that was aligned with his own career and his articulation of the artist's role.

Based on the findings of this research, I suggest that artists do articulate a conduct of maverickness in relation to networked ICTs. Its articulation is situated and negotiated over time among multiple social actors and does enable the production of power which is related to the artist's role. In this case, the specific relationship identified was that of squatting. At this point, one might also venture an early answer to sub-question III ("Does the mediation of networked ICTs by artists in some way enable or constrain the (re)production of maverickness in an art world network?") by suggesting that squatting, in Don's case, was deeply en-

tangled with his relationship to Access Grid. But in order to get a clearer picture of this ongoing relationship, a closer examination of classification work is in order.

7.2.3 Classification in the MARCEL art world network

Finally, the third empirical chapter (chapter 6) examined classification work involved in the development of MARCEL and my own reflexive account of events working within the network. It focussed on the processes of collectively coordinating collaboration for the design and use of media objects and media forms in an art world network.

Bowker and Star state that there can be no standards or conventions without classification (Bowker and Star 2001:15). One would therefore reason that prior to the contention of standards or conventions, the work of classifying them has to take place. Part of this process was observed even prior to chapter 6 (in chapter 5, section 5.4), relating to Don's articulation of a dialectic between television and video art worlds. In section 7.2.2 above, I identified how aspects of the production of culture tradition such as the conceptualisation of "worlds" and the artist's place within them were not far from the Don's grounded work and his formulation of Mondes, communication spaces, and the artist's role. Similarly, there are some parallels between Don's early attempts to classify television in opposition to video art and DiMaggio's (1987) work on classification and the social construction of art worlds. Don's dialectical representation, consistent with that of others at the time, can be viewed as a kind of artistic classification system (DiMaggio 1987) used to produce relations of power through differentiation and hierarchies such as "high art" over "low" or "popular" art forms. It seems unlikely that such efforts did not include, at least to some extent, the desire to attain a certain level of career distinction among peers (see Bourdieu 1979) and institutional gatekeepers (Ridgeway 1989). This "production of culture" reading of Don's efforts illuminates some of the dynamics of the wider institutional art world and the politics of elevating the artist's role within its structures. But it overlooks the deeper individual articulation of maverickness as the relationship between an artist and video or television as media forms; a relationship that extended beyond simple class divisions into his desire for a particular kind of maverick artist to have a greater degree of access to and control over media forms placed outside his or her conventional realm of influence. Such a relationship, as argued in chapter 3 (sections 3.6.2 and 3.6.3), could only be examined over time as it was negotiated within an art world network through collective work – a collective work that was most often referred to by actors in both the new media social world of academic high bandwidth networks and in the MARCEL art world network as "collaboration", be it working with Access Grid or working as a member of MARCEL or both.

As developed in section 6.1, collaboration implied a particular kind of equality among participants within the experimental process. A characteristic of this equality among the collabora-

tion's participants was manifested as a degree of independence or distance. The Oxford English dictionary reminds us of this distance with a second definition of collaboration as the "Traitorous cooperation with the enemy." (Oxford English Dictionary Second edition 1989). I do not quote this second definition to suggest that collaboration engendered betrayal. Rather, that the dynamics of power between collaborators depended on a certain level of distance – disciplinary, political, cultural and/or otherwise – between them. A distance similar to the organisational distance developed in section 7.2.2. Marilyn Strathern's anthropological research on interdisciplinary academic research (2006, see also 2004) recognised the challenges of collaboration between heterogeneous social worlds and their experts. She argued that critique became problematic among collaborators because of what I refer to in this study as "distance". As a result, she demonstrates how determining the level of success for such collaborations was problematic for some participants because the disciplinary "common ground" needed for critical judgement between contributors was not necessarily available. In such cases, interdisciplinarity could become not only a means to an end, but an end in itself whereby participants seek to understand aspects of the research from the perspective of other participants. Strathern sites Annelise Riles' case study of a network (Riles 2000) to suggest that interdisciplinarity became not only a tool but "also a sign" (Strathern 2006: 200), effectively turning the research process "inside out" (Riles 2000). In the case of this research, much of MARCEL's classification work involved representing a "network" as an organisational and technological tool for online collaboration among artists and a number of other actors. This section now turns to an analysis of this work.

As discussed in chapter 2 (section 2.4), the meaning of "network" itself was multi-facetted and in some cases even contradictory. The network as an organisational and technological support for collaboration in chapter 6 was not only applied as a meta-structure but applied and negotiated explicitly among actors in situ. Networks were at times technical, at other times social or ideological and yet at other times they encompassed all three. In chapter 6 I documented and analysed how the MARCEL Network embraced these contradictions and overlaps. It was therefore important not to overlook the reflexive nature of the artist's classification of networks when collaborating with others in an art world. Classifying the "network" of collaboration(s) was not simply the reproduction of "outside" categories but the production from "inside" the dynamic and contingent activities of the art world itself and its wider social and cultural context. In this study we can therefore interpret collaboration as both an historically constructed practice in a way that is similar to our interpretation of culture and new media (see chapter 2) and one that is formally implemented through the classification of social, cultural, and technological aspects of "network" into art world conventions.

To examine more clearly what kind of classification took place when members of the art world network collaborated, it was necessary to further explore the collective dimension of artistic work with ICTs. In chapter 6 an investigation into the work of producing formal iterations of the MARCEL art world network as a network was presented. This focused on the formal articulation of the network through texts and media objects using ICTs. Section 6.2 documented Don Foresta's, Georges-Albert Kisfaludi's and others' development of a classification system for an organisational and technical network prior to the creation of MARCEL. These networks were not only organisations or media forms. They could be understood as an ongoing interplay between social relations and multiple media units – a collection in time and space of people, projects, meetings, and media objects. Implicit and in some cases, explicit, within collaboration was classification work, specifically the development of a system of classification by artists and their support personnel to coordinate art world activity: defining work and, in this case, network standards in a way that enabled an art world network to develop and contest conventions.

As suggested in chapter 2 (in section 2.6.1), generating conventions for collaboration through classification work was not just about gaining advantageous positions in relation to other competing individuals as would players in a field, it was also necessary for coordinating basic telematic activities between multiple nodes through which subsequent power relations could be generated. The inconsistency of membership and technology lists reinforced the identification (in chapter 5) of contingency as a part of the artist's role when working with new media. In this case, it underscored the contingency of individual, organisational, and technological commitments between the art world network's actors.

What emerged out of the Souillac meetings, and even to some extent before these meetings, was a relatively consistent list of projects and underlying categories in which memberships and technologies could remain contingent. Although no explicit procedure existed for how artistic collaboration for the production of telematic artworks should take place among MARCEL participants, sections 6.3.1 and 6.3.2 identified a number of categories for the network. These categories were not imposed from outside the network nor were they limited to the categorisation of media forms. They were (re)produced, over time, as a means of representing the work of collaborating within an art world network by/for actors. Taken in this light, the categories were the most consistent manifestation of the MARCEL network. This list of categories was eventually designed as part of a media object – the MARCEL website – that the MARCEL members maintained over time and space. By the end of the field work for this study, it was still unclear whether the number of categories posted on the MARCEL website was determined by the navihedron's structure or vice versa. But to focus on such a question was a kind of "chicken or the egg" conundrum that overlooked the ongoing, deeply em-

bedded relationship that online tools had with the overall development of the categories. As with Strathern's analysis of interdisciplinary research, the website was not only a project initiated by the network; to some extent it also embodied the network, becoming one of its formal representations: a sign of what MARCEL had accomplished and an ongoing project at the heart of its activities.

An analysis of the MARCEL website provided a much broader temporal scale for artistic collaboration than the encounters with AG artworks and nodes. In a way, the website's three generations provided a glimpse into the development of new functionalities for the World Wide Web over a period of ten years: from basic static website, to one developed using Flash and wiki pages, to one developed using an even more sophisticated and dynamic content management system. Brief collaborative efforts on the website's different iterations melded together to become an extended collaborative arc. The list of "friends and colleagues" who were attributed to helping build the MARCEL site could be excavated like archaeological strata of past collaborations from the early work at Le Fresnoy at the top of the list moving progressively towards the work in Wimbledon, followed by the move to Maine (see section 6.3.5). For some, this contributed to its existence as a Poor Man's Kentucky Home. But it also left traces of work over time. Squatting, to a certain extent, was not only for Don Foresta and the other artists' roles. Like Don's artistic career (see chapter 5), the MARCEL website was continually transported and transplanted into multiple, varying contexts and designed using what was at the time relatively new media forms. The website produced its own kind of squatting: it was moved from country to country, organisation to organisation, server to server, taking with it bits of past incarnations.

What came through around the work of designing the website was the give and take process of the collaboration. Don demonstrated a significant 'network making power'. Specifically, he could dictate the website's properties based on an overall awareness of the network's history and its objectives. The best illustration of this was the choice to allow the navihedron to continue to function as a significant part of the site's navigation despite other members' reservations. Part of this power stemmed from his role as one of the network's primary programmers. Don's vision of art and artists was significant "touchstone" for members when working as part of the MARCEL network (see chapter 5, section 5.8). The way in which Don's work acted as a touchstone could explain the consistency of the MARCEL categories: these categories fell within a wider career programme that was very closely tied to Don's own career and the early categories developed as part of the Souillac meetings (see chapter 5). However, the "day-to-day" work and its relation to Don's programme were presented as distinct. In specific cases of collaboration such as the production of the third website, Grzesiek played the role of a switcher to a specific social world, a mediator between the new media social world of content

management systems and their objectives and its conversion/classification into a convention for the art world network. Grzesiek's expert knowledge of new media standards enabled him to dictate, to a certain degree, what MARCEL could and could not do on its website. Just as the engineers in the cases of AG collaborations between academic centres and artists had positioned themselves as those who were able to make AG's functionalities transparent, he was able to design the affordances of the site itself and even choose a number of its standards. Grzesiek also had power through his availability. Although, or possibly because, he was not paid for much of his work, he was able/forced to maintain a degree of distance from the network's activities and therefore was not obligated to meet any fixed timelines. In this sense, both he and Don were able to exercise forms of power over the other throughout the course of the collaboration.

In order to gain the support and recognition from the art world or new media gatekeepers, the members of the art world network felt that they had to represent the network to others and to themselves using the website. To a large extent, Don defined the network's programme but depended on many others to provide links to other social worlds and to keep the network active. Though Don was 'Mr. Network' (see chapter 5), connecting the different components of the network - switching between social worlds such as bringing in new media standards for content management systems for the World Wide Web – meant depending on members such as Grzesiek to define and inform its parameters. This was also made apparent in the talks between Don and Graziano.

about the future of high bandwidth. Their discussion was conducted between two consumers of the technology, and between concerned artists who would design and/or use the technology to produce artworks. Roles mixed together to inform their arguments: consumer and producer, user and designer. Where their opinions significantly differed was that Don believed in the importance of creating an expert 'communication space' for artistic production where experimentation could take place.

By examining the culture of collaboration for the production of culture, it has been possible to observe the dissemination of conventions and/or standards among art world actors including those relating to the design and use of a website and the promotion of Access Grid and high bandwidth. Arguably, the website enabled MARCEL members to formally articulate categories for the art world network in a way that the MARCEL virtual venue on the Access Grid platform could not. Despite the label that appeared in the text field for the MARCEL virtual venue, MARCEL existed within the pre-existing category of a 'Not for profit Organization' in its 'exits panels' (see section 4.3.1) next to a number of other virtual venue lobbies. No traces of contributing members, technologies (other than Access Grid itself), or projects were listed.

Based on interviews and participant observation with MARCEL managers, the MARCEL website's function was seen as partly promotional – as an outward facing platform to promote the artworks that were produced in other contexts such as on the Access Grid platform. On the surface at least, the website's construction was not presented as a tool for artistic expression. But, as related in chapter 6, the work of maintaining the website represented a significant MARCEL activity. As a media object, the website enabled the network to represent itself and its activities. Significantly, Access Grid as a media form for artistic expression was only marginally represented in the different generations of the website (although it was more prevalent in the third generation). Much of the effort of coordinating an art world network for squatting the high bandwidth network over the period observed therefore consisted of producing a media object in an altogether different media form: the MARCEL Network website.

Nevertheless, the two media objects were inter-related in that they both constituted a part of MARCEL's presence online. Just as Crane (1987:145-148) described art world networks as not having neat and clear boundaries that enabled a researcher to know when and where its activities began or ended, one could not look to a specific media form to provide a clear-cut boundary for the MARCEL art world network. But a brief comparison of the MARCEL virtual venue and the MARCEL website as "boundary" media objects – namely, as a play on Star and Griesemer's (1989) "boundary objects" that "inhabit several intersecting social worlds" (Ibid : 393) – is instructive for analysing MARCEL's classification work. Although the virtual venue enabled production of telematic artworks, it was the website that was designed and used for classification work. Returning to the latter part of sub-question I., Access Grid's new media standards were at least partly classified as meaningful conventions by artists using a different media form. Such a statement should not be taken as irreconcilably problematic: one can produce a museum catalogue as a fitting media object for the classification of a corpus of paintings. But what was significant in this classification work was that: 1) the MARCEL members were themselves doing the work of classification instead of leaving it to external gatekeepers, 2) this classification work resulted in a media object that constituted an explicit attempt to represent a "network" as an organisational structure, and 3) that this organisational structure's scope was not only limited to the production of specific artworks but was also extended to the social and technological infrastructure surrounding its production, distribution and appreciation. In other words, classification work was not only conducted as part of an art world network but in effect was an attempt to produce an art world network. Before developing this last point further, I examine classification as it related to Access Grid and other media forms for the production of artworks in greater detail.

VisitorStudio was introduced in chapter 6 in order to produce a comparison with Access Grid as a media form for the production of artworks. The VisitorStudio platform was designed us-

ing Flash. Because of this, the artists who helped design it felt that it remained a somewhat inflexible media form to other new media designers. However, as a media object for its intended users, the artists felt that it was well-suited because of its limited use of bandwidth and its widely available format. By designing it in a way that kept the standards of the media form transparent to the user, the designers of VisitorStudio presented it in interviews and on their webpage as well suited to an everyday audience who wished to collaborate online for the production of artworks. Though Access Grid was designed using open source code that was widely available to new media designers familiar with its protocols, arts groups like the Independents still hesitated in developing it as a convention. A preliminary observation suggested that Access Grid represented a liability as its technological life expectancy and usefulness, its future as a new media standard, was perceived by many as uncertain. This uncertainty made Access Grid's potential as an art world convention uncertain. MARCEL's work of promoting the high bandwidth network and Access Grid to independent media centres in the United Kingdom was an attempt to promote a new media standard to artists in order to encourage its dissemination as an art world convention. But, based on the observations in this study (as related in section 7.2.1), short technological life expectancies were not uncommon for artists working with new media. This suggests that the Independents' hesitation was not so much directed towards Access Grid and MARCEL but rather to the academic high bandwidth network on which Access Grid was made available. This was in large part, I would argue due to: 1) its ties to academic discursive spaces from which the Independents were, to a greater or lesser extent, excluded (hence the name "Independents"); 2) the perception that these academic spaces were distant from the Independents' intended user-audiences for their artworks; and 3) the long-term challenge of developing a permanent high bandwidth network for what was to be designed and used, for all intents and purposes, for an undetermined amount of open or exceptional experiments. An extensive commitment to Access Grid was inconsistent with the artists' culture of engaging with multiple media forms. In the case of Furtherfield, they expressed a willingness to adapt VisitorStudio for high bandwidth, but as a way of reaching a different user-audience – that of academic researchers. For them, Access Grid and the academic high bandwidth represented one of many "side-bets" (Becker 1960, see also Star 1992: 402) for iterations of the VisitorStudio project. Similarly, the artists working on Streaming-Tales were able to repeat the projects in different locations and instances using different media forms. Access Grid's and academic high bandwidth's classification from sets of new media standards to meaningful art world conventions was therefore not a straight forward process. On the one hand, its long-term success was contingent on its future as a new media standard, on its future as something that would enable artists' online collaboration with existing and new designer and user communities. On the other hand, some artists were satisfied with a

temporary engagement with Access Grid and high bandwidth as media forms for experimentation within academic discursive spaces.

Access Grid's potential was measured based on how it enabled experimental collaboration. One could, at this point, venture to answer the remaining two questions formulated by Star et al. (2003) for the analysis of transparency, namely: "What happens when degrees of transparency are different for various subgroups of users?" and "How does something become invisibly usable at [an organisational level rather than an individual level], and what differences are required in process and design content?" (Ibid: 242-243). Access Grid was unevenly understood as a tool for enabling artistic collaboration. Much of the work around classifying it as a convention, as observed in chapter 6, did not take place through collaborations for the production of artworks but through collaborations among actors in meetings, seminars, and face-to-face exchanges as part of related work. One could argue that Access Grid had not become transparent within the art world network as its value for supporting collaboration was still under discussion.

Based on the analysis in this section, the cost of committing to an endeavour such as the promotion of academic high bandwidth as an art world convention seemed to outweigh the benefits. In answer to research question III, one could therefore argue that an extended engagement in the mediation of a networked ICT resulted in constraining the (re)production of maverickness. But this section has also demonstrated that classification work was not seamlessly integrated into the process of mediation. Quite the contrary, the scope of classification work extended well beyond any specific media form or artwork into what I have argued was the production of an art world network. Artists' engagement with Access Grid and MARCEL could be activated and de-activated and in the case of Access Grid, multiple commitments to media forms was deemed advantageous. It is at this point that the conceptual model seems to strain under the weight of the research in order to answer the research questions. How is it possible to answer question III if the classification work observed was not directed to or supported by the very ICT I set out to examine? It is with this question in mind that I now turn to the synthesis of all three research threads.

7.3 Synthetic moment

In section 7.2.2 I have argued that artists conducted the mediation of Access Grid as part of what I refer to as a process of experimentation within an academic discursive space. I suggested that the transparency of Access Grid's standards, specifically relating to distance and flexibility, was inconsistently produced between its different media units. Greater flexibility or minimal distance at the level of media form, object, instance, or experience was not uniformly possible nor was it necessarily desirable for artists. Experimentation involved negotiating

these inconsistencies among artists in order to produce designer and user roles, the results of which were closely tied to the power dynamics of producing, distributing and appreciating telematic artworks with Access Grid. Similarly, the analysis of maverickness in section 7.2.3 suggests it was not articulated as a fixed mode of discursive conduct. Although its ties to the artist role were consistently understood as significant among all of the actors encountered, its specificities changed among actors and even for individual actors over time. Don's own articulation of maverickness – squatting – was crafted over time and his work shifted between multiple media forms. Viewed in this way, one could arguably speculate that the two career threads – Access Grid's and Don's – would dovetail nicely into production of an artwork: Access Grid's career as an experimental technology circulating within an academic discursive space made it an ideal tool for a telematic artist with existing ties to academic research while Don's articulation of the conduct of maverickness suggested that an emerging platform for semi-immersive collaboration was a suitable candidate for his desire to squat new media forms.

But such a view depends on a narrow focus upon a singular artistic project: a brief, exceptional encounter between an artist and an ICT for the production of an artwork. It overlooks the repetitions and interruptions in both careers made up of discourses, conventions and standards such as: how telematic conventions of distance encountered in this research involved working with multiple actors in real-time; how squatting was specifically directed to media forms rather than to the design and use of other media units; and how artists experimented with many different media forms in order to perfect a specific artwork. When viewed over an extended period of time, all of these factors came into play when members of MARCEL engaged in classification work. Once the long-term collective project of classification for artistic collaboration is taken into consideration, both mediation and articulation work spill into a complex series of negotiations within the art world network. The distinctions between the three sub-frameworks developed in chapter 2 (section 2.5) become muddled. It is here that one must take a closer look at the two aspects of work identified in the conceptual framework which enabled the shift from art world conventions to new media standards: conversion and classification. In the conceptual framework, I equated conversion, the part of the mediation process in which the artist represented the ICT to the outside world, with classification as the shift from standard to convention. The two were treated as equivalents because, in the conceptual framework, both resulted in the shift between new media standards and art world conventions. However, based on the findings of this research, both conversion and classification work took place in very different ways for very different purposes.

Conversion

Access Grid's conversion by different artists varied considerably. To some extent, this was its strength as a tool for artistic production. However, when artists produced artworks with Access Grid, they all ensured that aspects of its flexibility as a media form was made transparent to the audience-user's media experience. This transparency was the product of what one might call the artist's "second order" role as a designer of Access Grid media units in the mediation process. This second order designer role folded design and conversion in on itself. For example, the artists producing Streaming Tales appropriated Access Grid's design in open time in order to test ways in which they could re-design its media instances and the physical Access Grid node before converting it for the user/audience. In terms of the production of relations of power, this specific design/conversion work with Access Grid enabled the artist to conduct maverickness by exceptionally introducing norms of the dinner table into a videoconferencing experience. But conversion was not an attempt to redesign a part of Access Grid's infrastructure for an indefinite period of time; the artists were not redesigning Access Grid in the hopes of promoting it as a platform for artistic dinner parties between diasporic communities. Their second order changes to its design were part of the production of a specific artwork, Streaming Tales, as part of their careers as artists who conduct maverickness. Artists' conversion of Access Grid therefore involved designing exceptional conventions: conventions that could be repeated but whose meaning in the art world would be tied to the artists' agency.

Classification

As for the classification work with Access Grid standards observed in this study, much of it was not conducted with Access Grid itself. Meetings, websites, proposals, emails, and the like constituted many of the actual occasions for classification work of Access Grid and high bandwidth among art world network actors. More importantly, most of the classification work was not directed towards artworks produced with Access Grid or high bandwidth per se, but to the categorisation of the art world network as a collection of members, technologies, and projects. The successive meetings, such as those at Souillac, and projects leading to the creation of the MARCEL Network arguably constituted the formulation of a 'programme' (Castells forthcoming) focused on the collective and 'permanent' occupation of the high bandwidth academic network for artistic experimentation. A marker of the consistency of this MARCEL Network programme was the stability of the categories generated for/with the navihedron. In such a programme, infrastructure became a central concern. The MARCEL Network's programme, arguably, was to design an online art world network – classifying MARCEL's organisational and technological structure via the production of media objects such as the MARCEL website and the promotion of media forms. The MARCEL website's design as a "filing system in a library" (Lidl, section 6.3.1) perfectly summarised its purpose as

an infrastructural blueprint for MARCEL's activities. Classification work was also "outward facing" in that MARCEL's infrastructure such as Access Grid was actively promoted as conventions in the case of the Independents. Such classification work was not intended to produce an artwork or a meaningful categorisation of a corpus of artworks. It was deployed to categorise the actors, technologies and activities involved in the production, distribution and appreciation of artworks. The distinction between the two is key because it suggests a similar "inside out" reversal to the one developed by Riles (2000). Classification work such as the website and the Independents' meetings were therefore not simply means to an end but ends in themselves. Classification differed from conversion not only because it involved representing Access Grid in multiple media but also because it involved representing Access Grid as an open set of conventions: as a set of conventions that were not tethered to any specific artist or artwork. This is where the problem resurfaces for the artist's conduct of maverickness as the production of relations of power. Not so much because the artist cannot contest established standards/conventions through classification work, but because he or she cannot do so as an artist. Before expanding on this further, I will elaborate this statement as it applied to Don's career.

Even from his early writings on art, Don conducted classification work. In chapter 5, I demonstrated that his brand of maverickness was not only articulated through the production of artworks but also through teaching, writing and curating to name but a few activities. These works extended to the construction of "Mondes" and of the artist's ability to generate paradigmatic shifts through communication spaces. These were attempts to shape a comprehensive conceptual model of the overarching socio-technical categories within networks for cultural production and was perhaps why so many striking parallels appeared between Don's conceptualisation of the artist's role with aspects of the "production of culture" tradition: both developed models of the production of artworks with the artist's role as the core agent within a network of socio-technical relationships. (I should once again stress that I found no evidence that Don's work was in any way directly inspired by the "production of culture" tradition.) In Don's model, the artist's role was embodied by individual artists such as Nam June Paik and Marcel Duchamp. The latter and his artwork Trois Stoppages Etalons explicitly functioned as a yardstick, as an allegorical convention, for Don's representation of artistic agency and was employed by MARCEL members to develop the MARCEL Network programme. Interestingly, Alfred Gell (1998:245-250) uses the same artwork by Duchamp to develop his theory of each artwork as being "a place where [the artist's] agency 'stops' and assumes visible form" (1998: 250). I do not address Gell's work in detail here (for a discussion that does justice to his work, see Georgina Born (2005: 15-24)). I bring in this quote to suggest that Don's use of Duchamp as a conventional representation of the artist's role was intended to produce

a media form – what he referred to at varying points as Mondes or as communication spaces – where artistic agency could 'begin' rather than stop. To generate an infrastructure in which artistic agency, specifically the conduct of maverickness, could bloom. According to him, this required that he halt his artistic career, his production of artworks, in order to generate the network power for a particular media form.

This halt was comparable to the conceptual jump from the first sub-framework in section 2.5 to the production of network power and network making power in the third sub-framework. In choosing to stop being and artist, Don chose to help generate an infrastructure by producing the art world network from the outside rather than from the inside, by attempting to produce the conditions for the conduct of maverickness rather than conducting maverickness as an artist. As with the assumed equivalence between conversion and classification, however, the original conceptualisation of a dichotomy between a social understanding (outside) of the object of research and a cultural understanding (inside) of this same object is insufficient for at least two reasons. Firstly, classification work also involved mediation of media units such as the Drupal content management system and the navihedron. This work was itself taking place within the very fabric of the daily rhythms of the organisation rather than as an abstraction "from the outside". Secondly, although Don shed his role as an artist in order to help create MARCEL, the resulting programme still arguably fit within his articulation of the conduct of squatting as leading artists to "inventing and collaborating in the development of new systems to respond to their creative needs" (Foresta 1991b:131, author's translation): what I would argue is assuming a maverick designer role. Classification work with digital information and communication networks could therefore be deployed to contest standards/conventions as a 'programme'. But the set of conventions that resulted from such classification could not be linked to an individual artist's agency for fear that it would in turn constrain the very artistic freedom such work tried to foster, producing a dichotomy of roles between programmer-designer and artist-user. The former linked to the promotion or socialisation of standards and conventions through classification work and the latter to linked to the enculturation of standards and conventions through conversion as part of mediation work. An answer to the overall research question would therefore be that by designing and using digital information and communication networks through mediation, articulation and classification work, artists are redefining the socio-cultural parameters of who and what is an artist.

The use of the term "network" in the "MARCEL Network" was not simply limited to a digital information and communication network or an organisational network of individuals but was an attempt to reify a particular conceptualisation of conventions into something that could sustain the artist's conduct of maverickness, specifically as it pertained to the design and use of media forms, the "MARCEL conventions", if you will. One could therefore argue that in

attempting to assume both a user and designer role in the appropriation of digital information and communication networks, the artist did not only work to produce artworks, but also worked to produce the conditions for the production of artworks, programming and classifying an art world network. In this case, the core of this art world network programme was, I would argue, a particular understanding of the conduct of the artist's role as one who squats media forms for the production of telematic artworks.

7.4 Conclusion

In this chapter, I have examined the information compiled from the field in greater detail in order to produce a synthetic analysis of all three empirical threads. Three subsections within section 7.2 analysed the findings of the Access Grid thread (7.2.1), Don Foresta's career thread (7.2.2) and classification in the MARCEL network (7.2.3). In section 7.2.1 I showed that artists' mediation of Access Grid, specifically as it pertained to enabling transparency through distance and flexibility, was inconsistently applied but did result in the creation of designer roles for artists. The artist did articulate a conduct of maverickness but that aspects of this articulation were specific to the artist (see section 7.2.2). In 7.2.3, classification work was shown to be a significant part of the MARCEL network's activities, but that this work did not involve the classification of artworks so much as the classification of aspects of the art world network. Finally, in section 7.3, I synthesised the three threads in order to answer the overall research question: How do artists design and use digital information and communication networks for the production of artworks? In order to do so, the conceptual framework developed in chapter 2 (section 2.5) had to be revised in order to produce a clearer distinction between the conversion of new media standards into art world conventions and their classification. The resulting analysis suggested that, in assuming both designer and user roles with digital information and communication networks for the production of artworks, artists had to work to produce a reified art world network based on their articulation of the conduct of maverickness as well as the artworks circulating within such a network.

Chapter 8

CONCLUSION

8.1 Chapter summary

Once each of the career threads identified in chapter 3 had been constructed individually in chapters 4, 5, and 6, it was possible to weave together the three empirical threads through an analytical moment of interpretation intended to synthesise the earlier insights in the chapter (chapter 7). Before moving onto a discussion of the wider implications of the findings resulting from this analysis (section 8.4), I first review the empirical sub-questions formulated in chapter 3 (section 3.6.4) and summarise the respective findings for each one (see section 8.2 below). In section 8.3, I develop the theoretical and methodological implications of the study, arguing for the strengths of the conceptual and methodological framework and addressing some of the principle points of contention that its results appear to raise. Building on the discussion of the implications of the study, section 8.5 concentrates on future avenues of research stemming from the theories, methods and research findings developed here.

8.2 Review of empirical contributions

Despite the presence of the production of culture tradition as part of my theoretical foundation for this study. The principle object of research was the culture of networks for the production of culture rather than the social networks of cultural production. As the result of such an approach, it was possible to gain a deeper understanding of how artists design and use digital information and communication networks for producing artworks through an in-depth examination of three research threads. Specifically, I investigated:

What is Access Grid and how is it mediated by artists through design and use and within which discursive space(s)?

In order to answer the first part of this question, it was necessary to conceive of Access Grid through an infrastructural inversion (Bowker and Star 2002: 34) whereby one understands its set of standards as a series of practices and objects whose meanings are not fixed in time and space and subject to various relations of power. In this case, I focused on how artists engaged

with the mediation of Access Grid by mapping its design, appropriation and conversion, following how it was converted as part of particular artworks. I identified a specific type of mediation practice, designated as experimentation, which included all three stages of mediation: design, appropriation, and conversion. Experimentation with Access Grid was found to be closely linked to academic discursive spaces both physically – in space through the Access Grid nodes constructed in universities and art schools as well as through the temporal rhythms of working in these nodes – and through resources such as financial and organisational support. Employing the stratification of media units referred to in section 3.4.2, it was possible to examine how artists identified different affordances for design and use. One of the main insights produced by answering the above question was that artists were able to perform designer roles related to the appropriation and conversion of standards for Access Grid media units despite shifting technological and social standards that were not universally accessible to the artist.

A thematic analysis identified two key overarching themes related to experimentation with Access Grid for the production of artworks: distance – coordinating physical and organisational distance in both time and space between multiple actors – and flexibility – negotiating the perceived affordances of Access Grid's various media units among actors. Although the theme of flexibility was relatively consistent with those properties defined by Castells (Castells Forthcoming: 52-53, see section 2.4.1) for networks, the theme of distance did not neatly coincide with his conceptualisation of scalability and survivability: questions of distance impacted on the scale of network connections and how the coordination of artworks was configured from inside academic discursive spaces. It was also shown that the conversion of Access Grid's standards was an integral part of the artists', or group of artists', telematic artworks.

Does Don Foresta articulate a conduct of maverickness in relation to the artist's design and use of ICTs? If so, how? Does this maverickness extend to other members of the art world network?

In answering the first of these questions, I hoped to understand how an individual articulated the conduct of maverickness through the construction of an artistic career in an art world network. Don Foresta did not articulate the conduct of maverickness only through the production of artworks, however. Maverickness, like other forms of discursive conduct (du Gay 1996: 139-145), extended beyond the boundaries of the workplace. In the case of this individual, the artist's conduct was also articulated through writing, interviews, teaching, and conferences. Nor was maverickness limited to the contention of one particular standard or convention: the individual engaged with multiple and, at times, overlapping media forms. Over an extended period of time, it was possible to identify how this individual formulated his own

particular articulation of maverickness, in this case, the pre-emptive contention of emerging digitally networked media forms which he referred to as squatting. Squatting could be understood as the artist's reaction to the perception that artists' ability to innovate and create new artworks is overly constrained by established media forms, similar to Bolter's (2007, see section 1.2) concern that the overwhelming scale of developments in new media social worlds relative to art worlds threaten the artist's ability to innovate. Don's conceptualisation of the importance of power related to designer roles as part of this conduct with media forms was also a key facet of squatting. He emphasised how the artist should strive to progress from user to designer as indicated by a thematic analysis of the samples of his writings and interviews.

Answering the third question above involved examining whether art world network actors share the wider collective articulation of maverickness in the specific art world network in order to better understand whether and how artists articulate a conduct of maverickness in relation to digital information and communication networks. Such an understanding required analysing the wider circulation of maverickness among art world network actors. I found that, despite art world network actors sharing a conceptualisation of the conduct of maverickness as a constituent part of the artist's role, the particularities of how such a conduct should be implemented by artists was not uniformly understood. It was not possible to conclusively determine the degree to which other actors fully subscribed to Don's squatting, for example. Internal debates and discussions such as those described in section 6.4 partly involved the negotiation of different articulations of maverickness conduct. These could be summarised through oppositions such as: "Should we try to experiment at the level of media forms or at the level of media objects?", "Would our efforts be better directed towards pre-emptively engaging with future technologies or mediating more readily available and established technologies?", "Are extensible technologies better suited to the making of artworks or are toaster technologies?" (see section 7.2.1).

How does classification work take place in the MARCEL Network? How is Access Grid classified as a part of the MARCEL Network?

The first of these two questions was used to analyse the meaningful classification of new media standards into art world conventions. This analysis was focussed on how collaboration among multiple actors within the art world network was classified in order to coordinate art world activity by representing that activity to themselves and to others. I identified three categories of lists circulating prior to, as well as during the conception of, and subsequently over the course of the implementation of the MARCEL Network and its activities. These three categories – members' lists, technology lists, and projects lists – constituted one of the basic traces of classification work in MARCEL, enabling actors to collaborate and to represent this col-

laboration to others. The MARCEL website (see section 6.3.2) was a combination of these lists into a media object becoming not only one of its representations but also a significant focus of collaborative work in itself, thereby echoing Riles's (2000) analysis of the network turning itself "inside out" . The navihedron, it could be argued, functioned as an allegory of dynamic socio-technical relations within the art world network.

The second question above was formulated on the conceptual premise that conversion and classification were equivalents. I set out to answer the question by examining how Access Grid standards were classified by MARCEL members and potential members. The hypothesis based on the conceptual framework set out in section 2.5 was that Access Grid standards would be classified through the mediation of conventions in order to generate and/or contest conventions as part of the artists' conduct of maverickness. However, as demonstrated in section 7.3, this equivalency between conversion and classification had to be revised in order to factor in both of their particularities. Conversion was not simply part of the process of mediating ICTs for the production of artworks. It also involved a more open process of mediating ICTs as tools for the production of artworks. Likewise, classification work was found to extend beyond specific artworks into the representation of the art world network itself. Although art world actors did collaborate in order to produce artworks, classification and networking practices for exerting power over/through technologies, be it work programming or switching, involved producing and coordinating the art world network. Nor were conversion and classification of standards/conventions uniformly developed as collective practices. The same oppositions concerning the conduct of maverickness identified above – "experimentation with media forms or with media objects, pre-emptive engagement with future technologies or with technologies that were more readily available, extensible technologies or toaster technologies" – were part of the efforts to classify standards into conventions, negotiating between art worlds and new media social worlds. Because of these ongoing negotiations, Access Grid could only represent one of the many contingent relationships that constituted part of the MARCEL Network. Like the network's active/inactive members (see section 6.2.1) and transient projects (see section 6.4.2), Access Grid's role as a tool for the production of artworks and squatting the high bandwidth network could not occupy a permanent status as one of the network's defining characteristics. The MARCEL Network therefore struggled to find a consistent technological boundary for what we might call "networking the art world network", particularly as it pertained to the classification of new media standards over an extended period of time.

Having completed this empirical investigation, I argued that the specific art world network programme identified in the research focussed on the production of a particular kind of maverick artist role, one with the capacity to generate conventions through classification and pro-

gramming work as well as to produce telematic artworks through the mediation of digital information and communication networks. The work of producing, distributing and appreciating telematic artworks within particular discursive spaces itself depended on programming a parallel and inter-related ensemble of work practices for producing, distributing and engaging with the art world network as a system of conventions in which art world activity could take place. Before elaborating on the consequences of such findings, I now briefly review the theoretical and methodological contributions of this study to the field.

8.3 Theoretical and methodological contributions of the study

In chapters 1 and 2, I indicated that the objective of this study was, in part, to consider the complexities of our understanding of culture and specifically its production by artists in an age of digital information and communication networks. By combining aspects of the production of culture tradition with theories of mediation and power, I generated a conceptual framework for understanding how artists design and use digital information and communication networks to produce artworks. In the spirit of social scientists such as Howard S. Becker and Michal M. McCall (1990), Roger Silverstone (1994), and Craig Calhoun and Richard Sennett (2007) who have called for conceptual bridges between the sociology of art and cultural studies, this study's conceptual framework has, I suggest, enabled a novel and in-depth examination of a related case study utilising to great effect the strengths of two theoretical traditions: the production of culture tradition and mediation theory. Integrating discursive conduct with the production of culture tradition enabled the conceptualisation of individual and collective production of artworks while the theories of mediation and network power enabled the conceptualisation of actors' design and use of digital information and communication networks over time.

Drawing on the the work of those such as du Gay (1996, 1997, du Gay et al. 1997, du Gay and McFall 2008), Rose (2000) and Foucault (1984, 1991), the conceptualisation of maverickness as a kind of governmentality or "conduct of conduct" facilitated an analysis of the circulation of artistic innovation, and the artist role overall, as something embedded in social worlds and linked to discursive power relations. It also enabled an examination of working practices between artists and their tools as ongoing and meaningful, yet historically contingent relationships, that are key to understanding the artist's role as an agent. Through maverickness it was possible to study how artists strove to produce innovation and creativity while avoiding a normative conceptualisation of both of these terms as necessarily positive and the result of individual agency unconstrained by its social, cultural or technological context.

Similarly, Castells' (forthcoming) conceptualisation of network powers also proved useful as part of the conceptual framework. Specifically, network making power and its related pro-

grammer and switcher roles served well in the analysis of classification between the art world network and the social worlds of new media. When applied to the analysis of the mediation of new media standards, network power – the power of standards and their related cost of coordination – also served the framework well. Artists did perceive a cost to contesting certain established standards. However, network power's expected importance in constraining artists' work with digital information and communication networks for producing artworks was lessened due to the transparency of some standards and the artists' ability to mediate different strata of media units as a means of developing various designer and user roles. Artists did not have to challenge all aspects of an ICT. They could pick and chose which standards relating to which media units they wished to engage with. In combining the different conceptualisations of network power with stratified media units and the mediation of transparency related to media standards, the conceptual framework was able to provide a nuanced analysis of digital information and communication network's design and use. I therefore argue that the strength of Castells' framework lies in the sophisticated interaction it enables between the four conceptualisations of network power.

The principle theoretical contribution of this study has been to establish bridges between studies of new media and of the production of art. With few modifications, the conceptual framework was helpful in interpreting the research findings. The framework can also serve as a warning of the dangers of focussing too much on the artworks as part of the research as well as on the work relating to their production and appreciation to the detriment of other related activities surrounding art world work, such as classifying the art world network itself. I suggest that in order to produce a satisfactory understanding of art world activity, it is essential to be able not only to produce a conceptual framework which integrates the artist as producer, the artworks, and other art world actors such as audience members or other support personnel into its structure, but that such a framework should also consider external factors such as, in this case, the dynamics of standards in new media social worlds.

This is why, from a methodological perspective, multiple interwoven career threads arguably were so useful. They enabled a wider historical and thematic analysis of complex research subjects that did not necessarily neatly or discreetly fit into a specific social world. By constructing three distinct, yet inter-related, empirically informed threads – a historical account of the Access Grid's design and its eventual appropriation and conversion by artists in order to produce artworks, a biographical account of Don Foresta's work in articulating a conduct of maverickness for experimentation with emerging media forms, and an in-depth historical account of classification work involved in collaborations within the MARCEL Network – I was able to produce a detailed construction of meaningful work within the art world network. Each thread highlighted the contingency and indeterminacy of their development in time and

space despite their occasional coming together into art world activities. The stratification of media units proved useful for identifying overlaps and contradictions, contentions and transparencies, relating to standards and conventions for artists, particularly in ensuring that the online and the offline were not examined in isolation.

One of the main strengths of the study was the ability to examine relations of power without ignoring the artworks and without isolating the art world from other social forces. One could argue that the scope of the research design, focussing on only three empirical threads, represents a weakness. This methodological choice carried the risk of over-emphasising certain actors and technologies to the detriment of others, thereby skewing the findings and limiting their overall generalisability. However, as I argued in chapter 3 (section 3.2), the data collected for this study provided a basis for an analysis which yielded a deep and contextualised understanding of a specific case study which was, in turn, well-suited to answering the research questions formulated using the conceptual framework developed in chapter 2. Although the focus on one digital information and communication network and one artist may at first seem counterintuitive for the study of an art world network, this approach was suited to the dynamism and contingency of an art world structure with continually changing memberships and activities.

Another potential critique of my approach is that it did not present participant observation of the production of artworks by artists or of the artworks' appreciation by audiences. This is at once strength and a weakness as my own inability to produce such observations due to the timing of the field work inevitably informed the research findings. The strength of ethnographic research lies in recognising the importance of the "mundane details" (Silverman 2006: 46) of daily activities. In this case, it led me to observe how artists not only mediated ICTs but also how they articulated and classified their work with these ICTs. To have ignored such work in order to seek out the production of artworks would have hindered the very strengths of the methods used in the research. Nevertheless, based on the foregoing analysis, it may be instructive to look to other projects where production through design/conversion is taking place in order to observe whether similar articulation and classification practices are taking place. But before delving into potential avenues for future research, I turn to a short discussion of the key research findings.

8.4 Discussion

Recent academic work on the production of culture calls for "putting art back into social science approaches to the arts" (de la Fuente 2007). Namely, that in trying to get rid of the myth of the "creative genius" in the arts, social scientists also jettisoned other aspects of art, namely aesthetics and the specificities of artistic practice, that were essential to a proper understand-

ing of its place in the world. De la Fuente and others (see Becker et al. (2006) and Born (2009) for examples) suggest different re-evaluations of existing approaches to the study of the arts in which the properties of the artworks (or art in the making) are not understood as separate from the social processes surrounding their production, distribution and appreciation. What I want to suggest is that this study is, in effect, a demonstration of how artists deploy both the social as part of the artwork and the artwork as part of the social and how these deployments led to an overall problematisation of the artist's role itself. To illustrate how this argument is pertinent on a wider theoretical frame, I briefly turn to Lev Manovich's (2001: 218-243) development of the database as one of the dominant forms of expression with digital ICTs. Manovich presents the database as a means for artists to structure the "endless and unstructured collection of images, texts, and other data records" (Ibid: 219). He argues that digital ICTs represent a significant tool for the development of this form and goes as far as to suggest that it could lead us to "develop a poetics, aesthetics, and ethics of this database"(Ibid). But by limiting the scope of power within his conceptualisation of the development of form in a similar way to Bolter and Grusin's work presented in chapter 2 (section 2.6.3), Manovich misses the opportunity to move beyond the formal properties of the database and into wider socio-cultural practices in which the database is embedded: how the database can simultaneously function as part of the artwork and as part of its supporting infrastructure.

The classification work produced by the members of the MARCEL Network through the production of lists, meetings and media objects like the navihedron developed the network as an allegory of the social which structured in a similar way to the database but extended well beyond the limited frame of the artwork. I am not arguing that the MARCEL Network is an artwork. Rather, I suggest that the social, cultural, technological and aesthetic facets of the work observed were not kept neatly compartmentalised between the meaningful artwork and the surrounding social world(s). The production of telematic artworks, with their use of real-time multidirectional connections, required a complex online/offline socio-technical infrastructure, one designated by MARCEL as the "network". The MARCEL members' support and promotion of this network, or some of its facets, was an essential part of promoting or circulating artworks and ensuring the production of future artworks. This may explain why Manovich (2001: 162) finds it improbable that artists experimenting with synchronous communication can develop sustainable practices – because the conceptual tools for understanding the work involved in making these artworks at once meaningful and sociable are not yet at our disposal. This study has, I believe, taken some steps towards developing such tools.

I have argued in this study that practices and discourses embedded within specific and overlapping social worlds shape our understanding of creativity and innovation. Returning to Bolter's (2007) concern for the artist's ability to contest authority through formal innovation with

new media, I would firstly argue that aspects of such a formal innovation are still entirely possible. As has been shown in this study, artists were able to generate unconventional formal engagements with/through digital information and communication networks. However, artists were not working in an isolated art world that depended on a homogenous infrastructure, free from the flows of change taking place in new media social worlds. Returning to the theoretical example developed in section 2.2.6 where one asks a painter which of the two questions - "What kind of paint to use?" and "How to use paint?" – was more important, I would argue that, as it applies to artists' engagements with new media, the distinction between the two has not yet set in. Because of the complex and contingent flows of technological development taking place in new media, artists are continually discussing and debating what to use and how to use it. I found that part of this balancing act between worlds not only involved attempts to produce formal innovation but also involved generating the conditions that would enable the (re)production of artistic power through such innovations. Such conditions involved testing different configurations of the designer/user opposition (Suchman 2002) which stemmed from discourses of the new media social worlds where designer and user are distinct. This may be related to the early period of an art world's development where transparencies of roles between artist and support personnel are not yet set. Just as Baker and Faulkner (1991) found in the case of block buster films, telematic art and other artistic practices related to new media seemed to require a redistribution of artistic roles between design and use in which uneven relations of power are emerging. Whether this redistribution will lead to an individual able to deploy all the skills required seems unlikely.

Nevertheless, artists' engagements with new media observed in this study were not able to access a great deal of resources nor were the results of their work made widely available to and/or accessed by a large audience. This latter statement may hint to the worry that lies at the heart of Bolter's concern (and to some extent my own and, I would argue, to those of a number of other researchers dealing with contemporary art and new media as well as many of the individuals encountered over the course of this research): that artists who work within art world networks will remain peripheral to wider cultural and technological flows. It will likely always be difficult to anticipate which artists will have an impact on wider cultural forms, values, and aesthetics and to understand how such an impact is made possible. When viewed in the light of this research, and with a bit of critical self-reflection, I believe that this worry touches on a normative expectation of what artists' impacts should be. An underlying belief that artists should be able to reach out into the cultural and social ordinary (Silverstone 1994: 994) of wider global audiences while remaining unconstrained by broader structural relations of power. This may explain why artists like those observed in this study attempt to produce socio-technical structures for production as well as producing artworks in the hope of main-

taining this freedom. What this study demonstrates is that such structures are necessarily extended and intertwined with other social worlds and their related power structures.

8.5 Avenues for future research

I have already alluded to a few options for future research in this chapter. In one case by extending the scope and range of the existing study to more empirical threads related to this case study and, in another case, by engaging in participant observation of the production of artworks as part of a similar case study. Research related to the latter of these two options could lead to further insights into the development of distinctions between what I referred to in chapter 7 (section 7.2.1) as "open" and "exceptional" conventions. Such work would be useful in building further bridges between the production of culture tradition, especially recent work by Becker et al. (2006) on the completion of artworks, and research into appropriations of new media technologies. But there are also three other possible avenues of research that could benefit from further investigation. I address each of these in this section.

The first of these options involves examining the mediation of other applications and hardware such as Photoshop, Arduino, Flash, Pure Data, and the iPhone by other groups of expert individuals who produce culture such as graphic designers, industrial designers, or even media critics. The interest in conducting such research would be to build a more generaliseable framework for bridging the production of culture tradition and mediation theory by examining groups of individuals whose focus is not formal innovation and who do not share similar conventions and articulations of the conduct of relationships with ICTs.

The second option would entail further research into telepresence and telematics. Some of the frameworks developed in this research could usefully be applied to what seems to be an increasingly blurred division between online and offline technological arrangements for the production of culture, including synchronous broadcasts of theatre performances to distant venues[192]. Such emerging practices could benefit from further investigations into questions of distance and flexibility as applied to the coordination of the production of culture with digital information and communication networks in real-time.

Finally, a third option would involve a broader historical and theoretical examination of the articulation of maverickness and the aesthetic conventions of the social, similar to the allegorical use of the network by the MARCEL Network, as part of overlapping relationships between artistic discourse and practice and modern culture. From a theoretical perspective, such a study might look to works by Alison Krauss (1981), Peter Bürger (1992), and Thierry de Duve (1997), each addressed in this study, which have provided historical constructions of

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[192] http://www.nationaltheatre.org.uk/ntlive

avant-garde movements. These histories, however, were mostly limited to well-established figures and movements of art history. On the opposite end of the spectrum, work by Boltanski and Chiapello (2005), for instance, argues that neo-liberalism has been able to assimilate avant-garde practices as part of a broad management discourse of flexibility with what I would suggest are similarities to du Gay's (1996) conceptualisation of entrepreneurialism. Although Chantal Mouffe (2007) attempts to engage with Boltanski and Chiapello's work in order to rescue an artistic practice of contestation, she does so almost entirely without any art historical context. My interest would be to examine how avant-garde movements and other producers of culture have developed their own representations of the social as part of their practices and to investigate whether and how such representations have made their way into our other aspects of contemporary culture.

8.6 Conclusion

This chapter brings the study of how artists design and use digital information and communication networks to a close. It has reviewed the empirical contributions of this research by answering each of the empirical sub-questions devised in chapter 3 (section 3.6.4) in section 8.2. The following section (8.3) presented the main theoretical and methodological contributions of the study, first dealing with the strengths and weaknesses of the conceptual framework, followed by a similar overview of the methodological approach. Section 8.4 was reserved for a discussion of the results of the study, leading to an overview of a number of new potential research directions building on the present study.

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ANNEX 2 – VISUAL MATERIAL

Image 2.1 – 'example of an Access Grid Node' in Refka (2003)
http://www.accessgrid.org/agdp/guide/building-an-access-grid-node/2.4.6/html/c51.html
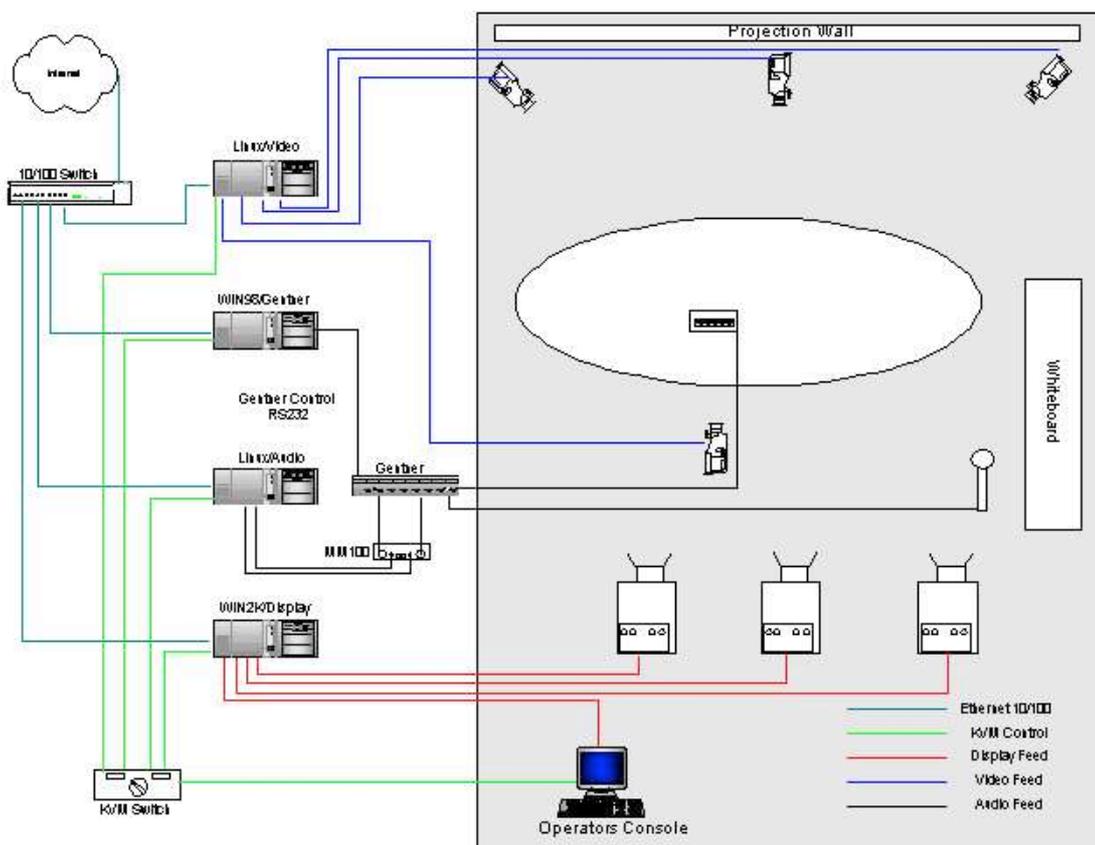
Image 2.2 – 'Room configuration' in Daw (2001)

http://mrccs.man.ac.uk/global_supercomputing/roomconfig.html
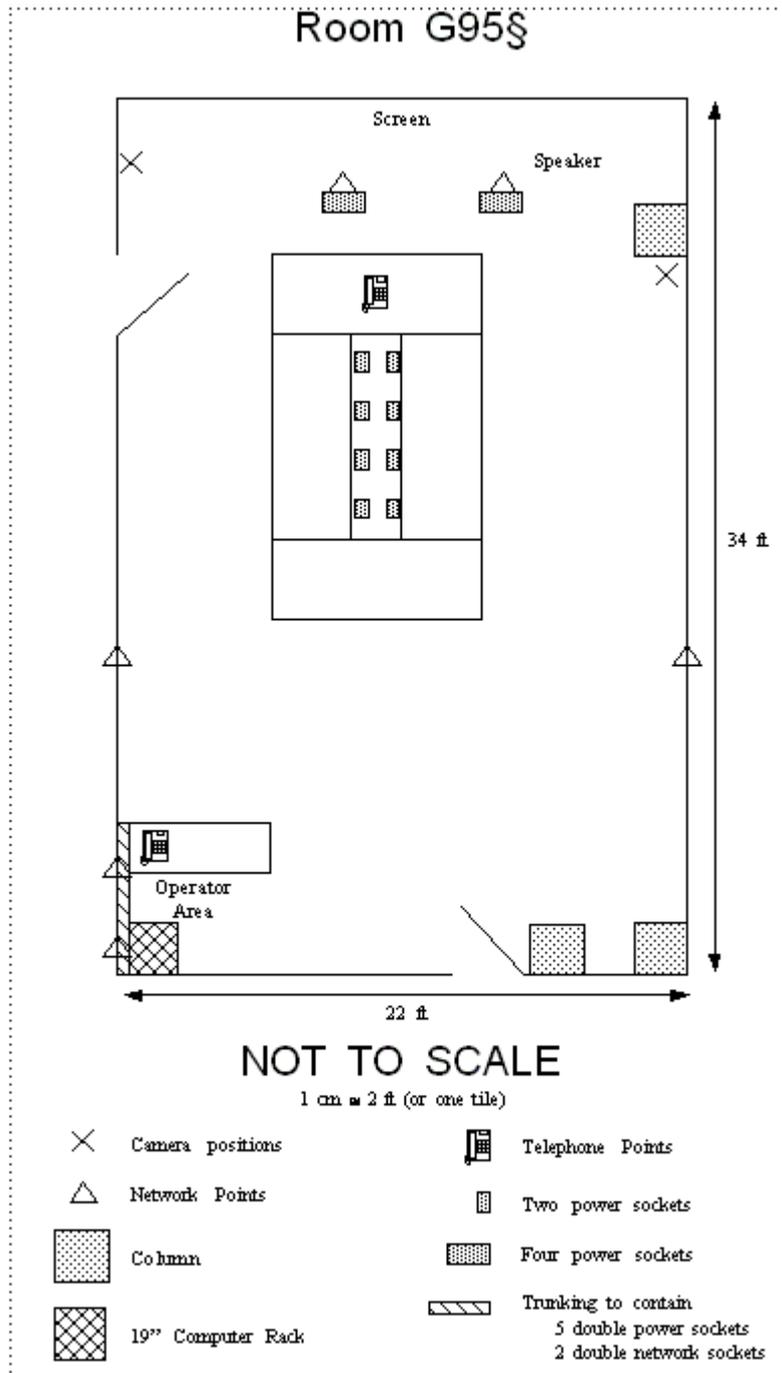
Image 2.3 – 'Venue Client' most likely a version of Access Grid 2.0

http://www-unix.mcs.anl.gov/fl/research/accessgrid/documentation/manuals/VenueClient/3_0/
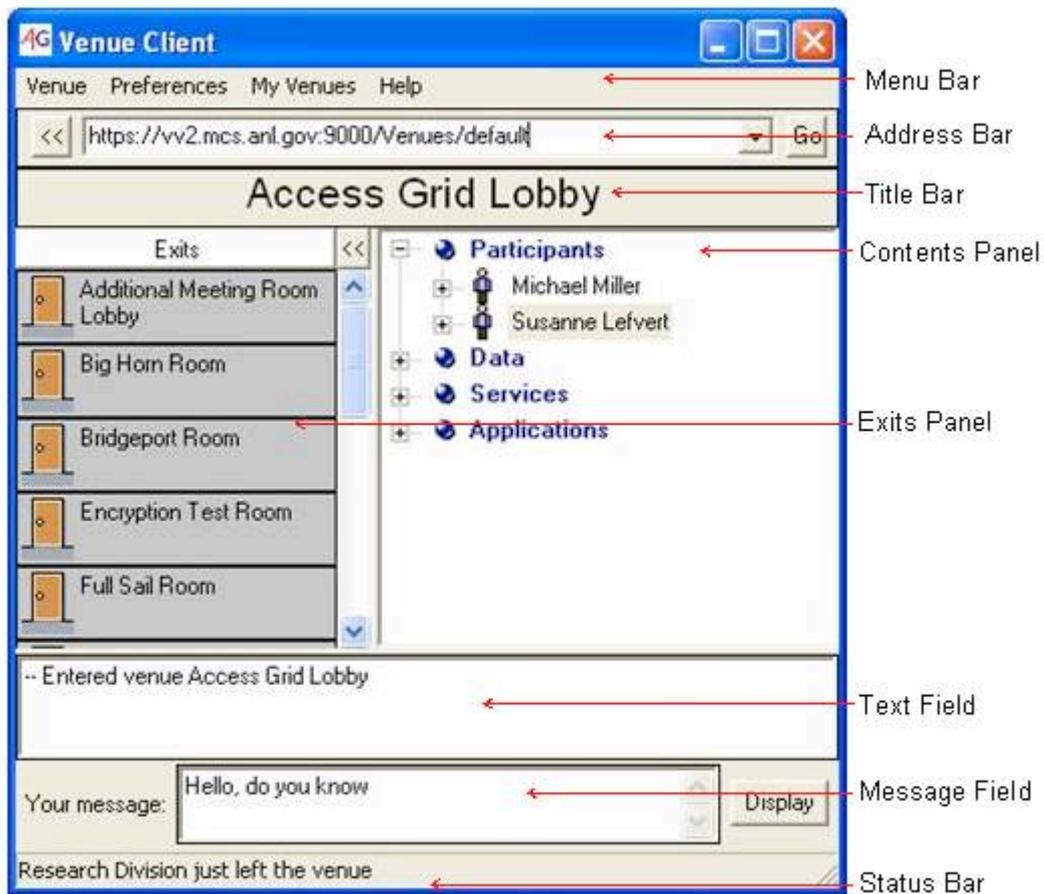
Image 2.4 – One of Manchester Computing's 'Test nodes' image taken by the author, 5 March 2007

Image 2.5 – Image representing the ALTERNE pilot presented at the Pittsburg SC Global Conference. http://alterne.info/node/45
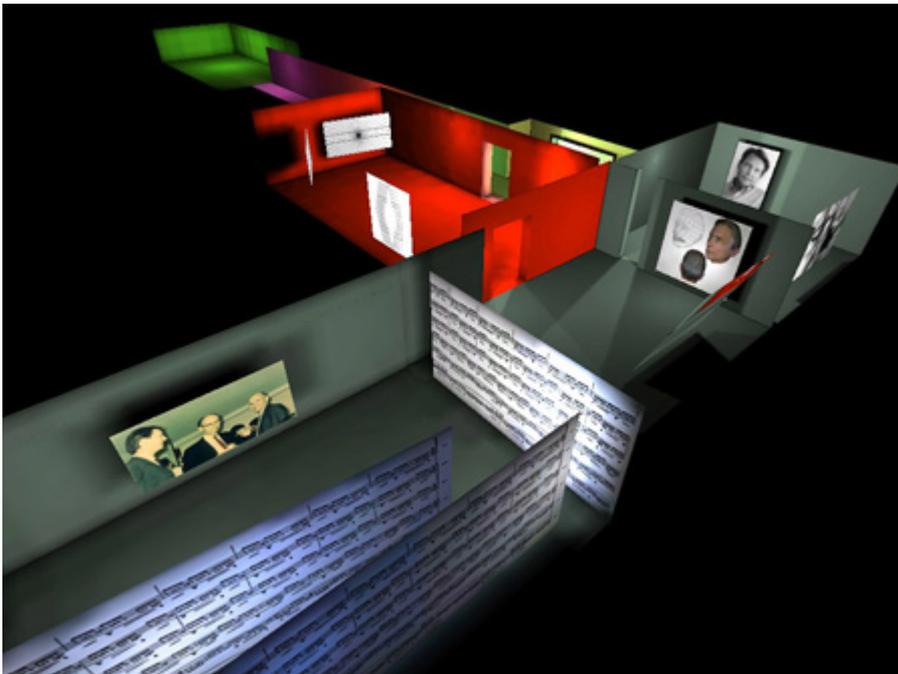
Image 2.6 – Screen capture of the second version of the MARCEL website as seen on a Windows explorer web browser. http://www.mmmarcel.org/marcel.htm
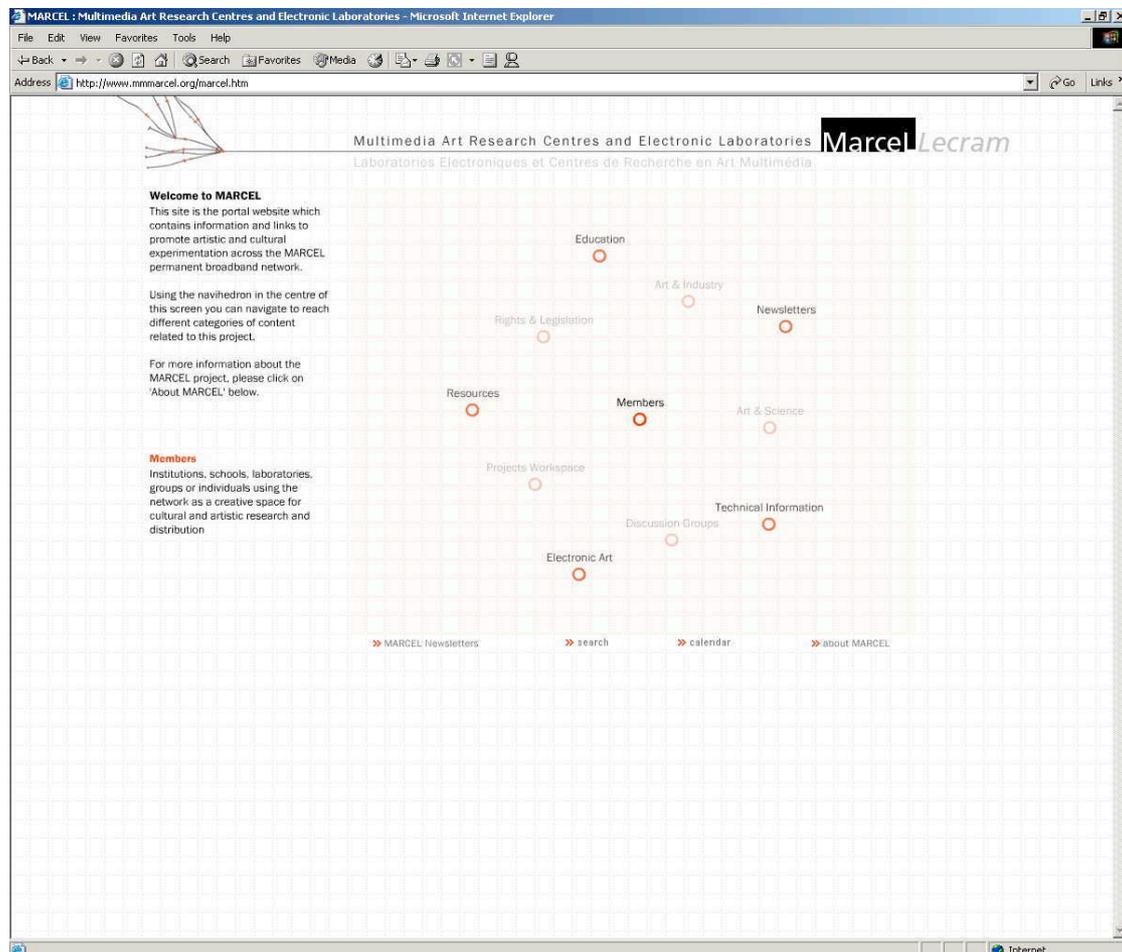
ANNEX 3 - THEMATIC CODES AND UNITS OF CODING 1: ACCESS GRID THREAD

Thematic codes

i) Label: Discursive space – a) everyday b) art world c) academic

  • Definition: Developed through a dialectical process of coding field data. Look for situations in which an actor defines the space through text or practices relating to the everyday, maverick art world networks, or academic research.

• Indicators: What organisational structure controls access to the space? What are the daily activities taking place within the space.

• Qualifiers and disqualifiers: a) everyday – eating, casual entertainment, family interactions b) art world – artistic events, gallery openings, curators, white cube c) academic – accessed from within a university, teaching environment, conferences relating research findings.

• Example: a) a kitchen in someone's home (see Graziano example in chapter 5) b) Furtherfield studio c) My office at the LSE.

ii) Label: Transparency

• Definition: This theme is based on Schaffer's as well as Star and Bowker work related to the standardisation of objects and practices. We are looking for the presence of conventions/standards that are "necessary" or implicit in the process of designing and using Access Grid for artistic work.

• Indicators: Explicitly referred to by an actor or observable when it is interrupted: ie. groups do not agree about how something should be designed or used.

	Distance	Flexibility
Transparency of media form AG and/or high bandwidth is made (un)transparent for an actor.		Identify along sliding scale between: i) *flexible form* – perceived to be enabling the user or designer to "do what they want". ii) *unflexible form* - Example: "Can't use AG without Multicasting."
Transparency of media object A particular aspect of AG and/or high bandwidth is made (un)transparent for an actor.		Identify along sliding scale between: i) *flexible media object* – perceived to be an object that can easily be modified. Example: "An AG node in the Wimbledon School of Art's theatre would allow us to control the lighting." ii) *unflexible object* - Example: "Those digital projectors are fixed to the ceiling."

Transparency of media instance *A point in time in which engagement with AG media objects is made (un)transparent for an actor.*	Identify along sliding scale between: i) *open* media instances – events where there is no explicit objective to the instance and without a specified beginning, middle, and end. Example: "We were just playing around with the connection after classes." ii) *exceptional* media instances – events where there is an explicit objective to the instance with a clearly specified beginning, middle, and end. Example: "It was hard to coordinate specific rehearsal times for all of the AG nodes."	
Transparency of media experience *The expected user experience of media units is made (un)transparent for an actor.*	Identify along sliding scale between: i) user is able to perceive distance. ii) user is unable to perceive distance. Example: "They weren't sure if the video signal was coming from Banff or not."	

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Media relationship

01/03/2007 - John Brooke (Manchester University)

01/03/2007 - Michael Daw (Manchester University)

12/04/2007 - Jeffrey Bary (New York University)

19/04/2007 - Jennifer Tieg Von Hoffman (Boston University)

Art world relationship

06/11/2006 - Grzesiek Sedek (Artist)

12/01/2007 - Luke Azevedo (Banff New Media Institute)

12/01/2007 - Susan Kennard (Banff New Media Institute)

08/03/2007 - Graziano Milano (Artist)

20/03/2007, 26/09/2007 - Tim Jackson (Artist)

26/04/2007 - Slavica Cerpovik & Galen Scorer (Artists)

01/05/2007, 22/06/2007, 31/01/2008, 4/04/2008 - Don Foresta (Artist)

09/05/2007 - Kelli Dipple (Artist)

22/05/2007 - Sheila Anderson (Arts and Humanities e-Science Support Centre)

13/07/2007 - Paul Sermon (Artist)

31/01/2008 - Alexandre Berthier (Artist)

Participant observation

20/10/2005 - First Multicast meeting at Wimbledon with Grzesiek (Wimbledon)

12/01/2007 - Visit at the Banff Centre for the Arts

01/03/2007 - Visit at the Access Grid Support Centre at the University of Manchester

12/02/2007 - Visit at the National Studio of Contemporary Art at Le Fresnoy

ANNEX 4 - THEMATIC CODES AND UNITS OF CODING UNITS OF CODING 2: DON FORESTA – ARTIST THREAD

Thematic codes

i) Label: Maverick Designer role

- Definition: Contesting or producing new standards/conventions through the design of media forms, objects, instances or experiences. "Power over" an ICT.

• Indicators: statement relating to an artist's design of a media unit implying that it is in some way different, innovative or contradictory to existing designs for media units.

• Example: "Kit Galloway and Sherrie Rabinowitz, going on step further, create new visual spaces through combining video imagery transmitted by satellite."

ii) Label: Maverick User/consumer role

• Definition: Contesting or producing new standards/conventions through the use of media forms, objects, instances or experiences. "Power through" an ICT.

• Indicators: statement relating to an artist's use of a media unit implying that it is in some way different, innovative or contradictory to existing uses for media units.

• Example: "Specifically the video artist, while filling out the ranks of the artists leading in the conquest of technology, also makes clearer the notion of the intuition and art. He has at his hands some of the most complex machinery produced by man and through it is able spontaneously to convert pure energy into image."

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Interviews

06/11/2006 - Grzesiek Sedek (collaborator)

15/11/2006 - Gabriella Kardos (collaborator)

12/02/2007 - Christl Lidl (student)

08/03/2007 - Graziano Milano (collaborator)

02/03/2007 - Hannah Redler (collaborator)

20/03/2007, 26/09/2007 - Tim Jackson (collaborator)

23/04/2007 - Owen Smith (collaborator)

24/04/2007 - Jon Ippolito (collaborator)

26/04/2007 - Slavica Cerpovik & Galen Scorer (collaborators)

01/05/2007, 22/06/2007, 31/01/2008, 4/04/2008 - Don Foresta (Artist)

14/05/2007 - Giles Lane (collaborator)

22/05/2007 - Sheila Anderson (Arts and Humanities e-Science Support Centre)

29/01/2008 - Jonathan Barton (collaborator)

30/01/2008 - Georges-Albert Kisfaloudi (collaborator and student)

30/01/2008 - Olivier Lescurieux (collaborator)

31/01/2008 - Alexandre Berthier (student)

Participant observation

20/03/2006 MARCEL Managers' meeting

See also participant observations in annex 5.

ANNEX 5 UNITS OF CODING 3: THE MARCEL NETWORK

Thematic codes

i) Label: Classifying members
  • Definition: Lists of names of individuals or organisations who are represented as MAR-
  CEL members or as participants in a telematic artwork produced by the MARCEL Network
  or any preceding organisations (ex: Artistes en Réseau)
  • Indicators: More than three names in a consecutive order fitting the above definition.
  • Example: MARCEL Network node managers' list provided on the MARCEL website.

ii) Label: Classifying projects
  • Definition: List of activities or actions related to a specific MARCEL Network event or
  series of events.
  • Indicators: More than three activities or actions in a consecutive order fitting the above
  definition.
  • Example: Future activities listed in the Souillac II report.

iii) Label: Classifying technology
  • Definition: List of names of hardware or software related to the design and/or use of me-
  dia forms for art world activities.

- Indicators: More than three pieces of hardware and/or software in a consecutive order fitting the above definition.
- Example: Equipment list inventory. MARCEL Archive 00027

Documents

MARCEL Archives 00001 through to 00126

See also all three phases of Documents in Annex 4

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Interviews (member includes former members)

06/11/2006 - Grzesiek Sedek (member)

15/11/2006 - Gabriella Kardos (member)

29/09/2006, 08/02/2007 - Ruth Catlow and Marc Garret (members, Furtherfield)

12/02/2007 - Alain Fleisher (node manager)

12/02/2007 - Christl Lidl (member)

08/03/2007 - Graziano Milano (Node manager)

02/03/2007 - Hannah Redler (Node manager)

20/03/2007, 26/09/2007 - Tim Jackson (Node manager, Psyops)

22/04/2007 - Mike Scott (Node manager, ASAP)

23/04/2007 - Owen Smith (Node manager)

24/04/2007 - Jon Ippolito (Still Water)

26/04/2007 - Slavica Cerpovik & Galen Scorer (members, Galen was part of Psyops)

27/04/2007 - Dana Samuel (Node manager, InterAccess)

30/04/2007 - Jean Gagnon (Node Manager, Langlois Foundation)

01/05/2007, 22/06/2007, 31/01/2008, 4/04/2008 - Don Foresta (Coordinator)

11/05/2007 - Briony Marshall (formerly Briony Pope, member)

14/05/2007 - Giles Lane (workgroup leader, member)

22/05/2007 - Sheila Anderson (Arts and Humanities e-Science Support Centre)

29/01/2008 - Jonathan Barton (member)

30/01/2008 - Georges-Albert Kisfaloudi (member)

31/01/2008 - Alexandre Berthier (member, Marswalkers)

Participant observation

19/08/2005 Meeting with Julian Lebensold (Montreal)

19/08/2005 Meeting with Alain Depocas (Montreal)

12/10/2005 Meeting with Don (phone)

20/10/2005 First Multicast meeting at Wimbledon with Grzesiek (Wimbledon)

25/10/2005 Meeting with Don (phone)

04/11/2005 Meeting with Don (phone)

09/11/2005 Meeting with Tom at the WAAG (Amsterdam)

16/11/2005 Meeting with Don (phone)

22/11/2005 Meeting with Gabriella at Café Nero (London) (Note book)

25/11/2005 Meeting with Don (in my office)

28/11/2005 Meeting with Don (in my office)

29/11/2005 Meeting with Don and Roger (Roger's office)

30/11/2005 Meeting with Don (my office)

01/12/2005 Independents Watershed meeting (Bristol)

16/01/2006 Meeting with Don (phone)

17/01/2006 Email attempt to MARCEL Working Groups (Working
groups_17_01_2006.doc)

02/02/2006 Meeting with Don and Roger (Roger's office)

04/02/2006 Meeting with Don (London)

07/02/2006 Meeting with Don (London)

15/02/2006 Meeting with Don (London)

16/02/2006 Meeting with Don (London)

23/02/2006 Meeting with Don (London)

11/03/2006 Meeting with Don and Jose Carlos (London, my office)

13/03/2006 Meeting with Don (phone)

19/03/2006 Dinner before manager's meeting at Indian restaurant near Don's hotel (London)

20/03/2006 MARCEL Managers' meeting (London)

21/03/2006 Second day of MARCEL Managers' meeting (London)

22/03/2006 Meeting at King's College London with Sheila Anderson of AHeSSRC (London)

22/03/2006 Meeting with Don and Tom from Sussex University in lobby of Don's hotel (London)

23/03/2006 Meeting at Canada House with MARCEL Managers (London)

29/03/2006 Meeting with Slavica Ceperkovic (phone – my office/Banff Centre)

04/04/2006 Meeting with Don (London)

20/04/2006 Meeting with Don (phone)

04/05/2006 Meeting with Don (London)

23/05/2006 Meeting with Don (London)

31/05/2006 Meeting with Don and Tom at Sussex University (Brighton)

02/06/2006 Meeting with Don (London)

19/06/2006 Archiving meeting at King's College London offices (London)

26/07/2006 Meeting with Lorna Hughes (King's College London offices) (London)

01/08/2006 Meeting with Don (London)

02/08/2006 Meeting with Don (phone)

30/08/2006 Meeting with Don and Carlos in my office (London)

04/09/2006 Meeting with Don and Graziano in my office (London)

15/09/2006 Meeting using Access Grid in my office (London)

29/09/2006 Interview with Ruth and Marc at Furtherfield (London)

03/10/2006 TERENA Videoconference (London)

04/10/2006 Meeting with Don on Skype (London)

25/10/2006 Meeting with Don (London)

09/10/2006 Meeting with Don on Skype (London)

17/10/2006 Working on ACE application with Graziano in my office (London)

19/10/2006 Sussex meetings (Brighton)

20/10/2006 Meeting with Don by phone (London)

27/10/2006 Meeting using Access Grid in my office and later Skype (London)

03/10/2006 Meeting with Don on Skype (London)

06/11/2006 Meeting with Grzesiek in Wimbledon (London)

08/11/2006 Meeting for Visitor Studio at Furtherfield (London)

14/11/2006 Meeting with Alban Asselin from Hexagram in his hotel's lobby (London)

14/11/2006 Meeting with Don on Skype (London)

15/11/2006 Interview with Gabriella (pub near her place)

17/11/2006 Conference on using AccessGrid (Birmingham)

20/11/2006 Meeting with Don and Graziano in my office (London)

21/11/2006 Don presentation at the LSE (London)

30/11/2006 Meeting with Don on Skype (London)

14/12/2006 Meeting with Don on Skype (London)

12/01/2007 Interview with Suzanne Kennard in Banff Centre for the Arts (Banff, Canada)

12/01/2007 Interview with Luke Azevedo (Banff, Canada)

22/01/2007 Visitor Studio training workshop (Furtherfield studios, London)

25/01/2007 Meeting with Don on Skype (London)

31/01/2007 Meeting with Don on Skype (London)

06/02/2007 Meeting with Don on Skype (London)

08/02/2007 Second Furtherfield interview (London)

12/02/2007 Interviews at Le Fresnoy

20/02/2007 Visitor Studio training seminar in Bruce Grove (London)

23/02/2007 Visitor Studio training seminar in Bruce Grove (London)

25/02/2007 Furtherfield curating event (London)

26/02/2007 Meeting with Grzesiek in Wimbledon

01/03/2007 Interviews in Manchester University (Manchester)

02/03/2007 Interview with Hannah Redler at Dana Centre (London)

06/03/2007 Meeting with Don on Skype (London)

08/03/2007 Interview with Graziano in café near his place (London)

16/03/2007 Interview with Dave Patten at Dana Centre (London)

19/03/2007 King's College London Methods Network Meeting (videos, documents, notes) (London)

20/03/2007 Interview with Tim Jackson in LSE coffee shop (London)

20/03/2007 MARCEL meeting at the Indian restaurant (London)

22/03/2007 Meeting with Don in my office (London)

12/04/2007 Interview with Jeffrey Bary, NYU (New York)

19/04/2007 Interview with Jennifer Tieg Von Hoffman, Boston University (Boston)

22/04/2007 Meetings with Mike Scott (Orono, Maine)

23/04/2007 Meeting with Owen Smith (Orono, Maine)

24/04/2007 Meeting with Jon Ippolito (Orono, Maine)

26/04/2007 Meeting with Slavica Cerpovic and Galen Scorer (Toronto)

27/04/2007 Meeting with Dana Samuel (Toronto)

30/04/2007 Meeting with Jean Gagnon (Montreal)

30/04/2007 Meeting with Don (Montreal Café)

01/05/2007 Meeting at Hexagram with Alban Asselin and Sam (Montreal)

01/05/2007 Meeting with Herve Fisher (Montreal)

01/05/2007 Interview with Don (Montreal)

01/05/2007 Meeting with Luc Courchene and Rene Barsalo at SAT (Montreal)

02/05/2007 MARCEL Managers' meeting at Langlois Foundation (Montreal)

03/05/2007 Collaborative Media Lab (Orono, Maine)

07/05/2007 Meeting with Dana for Massachusetts Arts (Boston)

09/05/2007 Interview with Kelli Dipple (London)

14/05/2007 Interview with Giles Lane (London)

16/05/2007 Meeting with Don on Skype (London)

18/05/2007 Meeting with Don on Skype (London)

22/05/2007 Interview with Sheila Anderson in AHeSSC (London)

24/05/2007 Meeting with Don on Skype (London)

25/05/2007 Meeting with Don and Grzesiek on Skype to work on MARCEL website (see notes – Third generation website work) (London)

29/05/2007 Meeting with Don on Skype (London)

01/06/2007 Meeting with Grzesiek and Don in Wimbledon (London)

01/06/2007 Meeting with Don on Skype (London)

12/06/2007 Meeting with Don in my office (London)

12/06/2007 Meeting with Grzesiek and Don in Wimbledon (London)

22/06/2007 Interview with Don (London)

05/07/2007 AG training session (London)

17/09/2007 Meeting with Grzesiek and Don in Wimbledon (London)

19/09/2007 Phone meeting with Vassar (London)

26/09/2007 Second interview with Tim Jackson (London)

29/01/2008 Interview with Jonathan Barton at home (Paris)

30/01/2008 Interview with Georges-Albert Kisfaludi (Paris)

30/01/2008 Meeting with Olivier Lescurieux (Paris)

31/01/2008 Interview with Alexandre Berthier (Paris)

31/01/2008 Interview with Don (Paris)

4/04/2008 Follow-up interview with Don – over the phone from London to Paris