ON THE POSSIBILITY OF COMMUNITY IN CONTEMPORARY TECHNOCULTURE

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INTRODUCTION

This dissertation was initially intended to be an excursion into the communal side of digital technologies. After all, as Zygmunt Bauman (2001:1) points out, "community" is a word that feels good and provokes images of warmth and comfort, something that regardless of the context appears to be worth striving for and thus a topic truly worthy of an inquiry. One of the assumptions that arose at the beginning of the research was that, given the frequency with which communal aspects of technology are discussed in both popular and academic discourse, there certainly must be some currency in the arguments that attribute a bond-forming quality to digital technologies; after all, the inhabitants of industrialised societies so eagerly flock towards them. However, it soon became obvious that Bauman's acidic remark that 'community can only be numb – or dead' (2001:11) points toward a more complex and less romanticised reality. He argues that a sense of community can be sustained only as long as it functions properly and is not questioned. Such an understanding of community can thus be likened to the "black box" as discussed by Latour (1999:183-4); whereby the failure of a technological artefact shifts the observers' perception to its many constituent parts, previously conceptually invisible. The changes in the structure of society following the so-called industrial revolution and their exacerbation through the globalisation of labour, information and capital flows suggest, that a healthy dose of scepticism is crucial whenever the communitarian rhetoric is invoked. As Hobsbawm remarks: 'never was the word "community" used more indiscriminately and emptily than in the decades when communities in the sociological sense became hard to find in real life' (Hobshawm in Bauman 2001:15). The discourse on the prophesied second revolution, brought about by electronic communication and computational technologies is no exception. The promise of electronic community takes on many forms: participation, democratisation, interaction. Such promises are not new and Marvin's (1988) discussion of the Victorian era shows how persistent these narratives are, the hopes and fears of today paralleling those of past centuries. In fact, as Morris

remarks, the entire course of our advancement as a species can be seen in terms of the unresolvable conflict between neophilic and neophobic urges: 'we explore and we retrench, we investigate and we stabilise' (1994:94). The following analysis is, therefore, an investigation into this alleged breakdown of community and what hides behind it. This necessarily entails seeking out the imaginary community that we project onto technological objects and express in culture, as well as analysing the various networks that have come to be called communities. Due to the broad range of topics and scale on which this research operates, it unfolds as a story with a narrative of its own:

Chapter 1 - Key debates, literature review and methodology

Provides a discussion of the major issues in the field of new media studies including common fallacies that can be found throughout popular and academic discourse on technology. The terminology used in this paper is explained and key texts are discussed. This chapter also establishes the methodology for the analysis and forms the problems and questions addressed in the following chapters.

Chapter 2 - Field research

Focuses on the author's field research at the Live Performers' Meeting 2010 in Rome, Italy and proposes an alternative approach to artistic agency in computation-based audio-visual performances.

Chapter 3 - Technoculture

Introduces the concept of technoculture and attempts to critically examine three contemporary phenomena: FLOSS (Free/Libre/Open Source Software), the netlabel scene and the demoscene.

Chapter 4 - Technology and counter-culture

Revisits the counter-culture of the 1980s and 1990s and analyses the imagined and realised futures of technology.

Chapter 5 - Technology and the marketplace

Attempts to unveil the economic and power relations in commodity-driven economies through a genealogy of consumerism and analyses the role of the "technological fix."

Chapter 6 - Conclusions

Reconnects the threads woven throughout the paper and looks for the possibility of an alternative ontology of humans and technology.

CHAPTER 1:

KEY DEBATES, LITERATURE REVIEW AND METHODOLOGY

Discussing digital technologies, and technology in general, requires the researcher to maintain a certain degree of cautiousness. The investment in technologies and technological progress which lies at the core of contemporary societies, and the resulting enveloping of technologies in ideologies and grand narratives requires the acknowledgement of technology's hybrid character. In particular, information systems beg to be seen as both material and discursive (Schaefer 2008) or using Barad's (2007) terminology "material-discursive." Doing so is the first step to avoiding one of the greatest pitfalls that discourse on technology tends to fall into: the dual illusion of determining and determined technology. For example, the argument for the neutrality of technology rests on the assumption that it is the cultural use of a technology that determines its character. However, as this dissertation elaborates, maintaining the dichotomy of technology and culture is only possible at great expense. Neither can technology be black-boxed and submitted to sociological macro-processes, nor can power relations and cultural narratives be ignored when discussing the design of technologies. The need for combining the insights and conceptual tools of multiple disciplines and going beyond false problems brought about by dichotomies is reflected in the hybrid character of approaches gathered under the banner of new media studies and enlisted for the purposes of this research. Whilst some unfamiliar features of contemporary technological ensembles require the application of new conceptual tools; a historically-informed and genealogical approach is crucial to avoiding the trap of novelty. As Bolter & Grusin (2000) emphasise, new technological developments do not appear in a void but remain in a dynamic relationship with existing technological forms; what they call "remediation." The notion of technological revolution or rapture is at best inaccurate and in most cases nothing more than an overly romanticised trivialisation. Latour summarises this critique by

saying that:

> ”In potentia” the modern world is a total and irreversible intervention that breaks with the past, just as “in potentia” the French or Bolshevik Revolutions were midwives at the birth of a new world. Seen as networks, however, the modern world, like revolutions, permits scarcely anything more than small extensions of practices, small accelerations in the circulation of knowledge, a tiny extension of societies, minuscule increases in the number of actors, small modifications of old beliefs. When we see them as networks, Western innovations remain recognisable and important, but they no longer suffice as the stuff of saga, a vast saga of radical rupture, fatal destiny, irreversible good or bad fortune.
>
> ***(Latour 1993:48)***

Both popular and academic discourses are abundant in such totalising narratives and ‘the idea of technological revolution has become normative – routine and commonplace’ (Robins & Webster 1999:1). This situation is counter-productive to the understanding of technological systems as it easily leads to a kind of confirmation bias wherein conclusions are drawn based on preconceptions about historical inevitability. However, to assume that one is somehow beyond fallacies and immune to paradigmatic thinking is disingenuous. Honesty dictates, therefore, that one’s intellectual allegiances are made explicit and these first two chapters aim to fill this role.

In spite of what the word “new” in new media studies may imply, the body of knowledge at the disposal of a new media researcher is fairly stable. Lister et al. (2009) in their *New Media: A Critical Introduction* provide an overview of the key debates in the field and, while this does not imply that it is the yardstick

against which all theoretical inquiries are to be measured, it proves to be a reliable source of information in a field notorious for desperately trying to catch up with technological innovations, often at the expense of scrutiny. While the reader should consult Lister et al. (2009) or Bolter & Grusin (2000) for a more detailed discussion, some of the most relevant issues are summarised here.

One of the misconceptions about digital data is that of its immateriality. The separation of digital media texts from physical forms does not mean that they transcend matter (Lister et al. 2009:18-19). Hayles' (1999) critique of Moravec's (1988) grotesque vision of a disembodied, digitised existence points to the problem of assuming that information can be separated from its medium. According to Hayles, outlining 'information pathways connecting the organic body to its prosthetic extensions … presumes a conception of information as a (disembodied) entity that can flow between carbon-based organic components and silicon-based electronic components to make protein and silicon operate as a single system' (1999:2). If that is the case, is there a way to speak of ensembles of humans and computational technology without replicating such a presumption? After all, a mechanistic view of embodiment that presumes the existence of bodily boundaries has been thoroughly contested by science and philosophy over the course of the twentieth century (Barad 2007:155). While one can agree with Hayles that the lack of *a priori* distinction between the human and non-human in cybernetics contributes to the deconstruction of the humanist subject, such an approach does not necessarily mean subscribing to the concept of immaterial information. Some help in navigating this minefield of theories comes from the analysis of the mutual constitution of human and non-human actants in Actor-Network-Theory and in Barad's (2007) agential realist framework. The work of Latour (1993, 1999, 2005) provides some of the language and conceptual tools for understanding the hybrid character of technological systems. While originally concerned with the practice of science, ANT approaches have been successfully translated into other areas – in particular Schaefer's (2008) use of ANT in his discussion of participatory culture is acknowledged here. Since the focus of this research is on digital technologies which

operate as multi-scalar ensembles of often networked computer systems, a software studies perspective (Fuller 2005, 2008, Kittler 1995, Manovich 2001, Schaefer 2008) must also be used to shed light on the often neglected affordances and design features of computational technology. The term affordance has been appropriated from the area of psychology of design and has come to mean 'the fundamental properties that determine how an object could be used' (Schaefer 2008:31). What the combination of these methods is meant to achieve is a grounding of theory in practice. As Barad elaborates:

> to theorise is not to leave the material world behind and enter the domain of pure ideas where the lofty space of the mind makes objective reflection possible. *Theorising, like experimenting, is a material practice*.
>
> ***(Barad 2007:55, emphasis in original)***

Acknowledging the materiality of theory comes from an acceptance of our own embodiment and thus the materiality of our own existence. This does not mean that all insights are mere idiosyncrasies, just as 'the fact that we make knowledge not from outside but as part of the world does not mean that knowledge is necessarily subjective (a notion that already presumes the pre-existing distinction between object and subject that feeds representationalist thinking)' (Barad 2007:91). In other words, as Desmond Morris (1994) demonstrates, it is implausible to see human behaviour (including knowledge-making) as somehow transcending our evolutionary heritage, just as it is a fallacy to assume that we are in essence separate from the rest of the world. The reification of false problems brought about by linguistics should not divert our attention from things that matter, or as Haraway puts it: 'if science studies scholars have learned anything in the last decades, it is that the categorical dualism between society and science, culture and nature, is a setup to block a grasp of what is going on in technoculture' (2008:136). Thus, the study of technoculture explored in **Chapter 3** is understood here as 'an enquiry

into the relationship between technology and culture and the expression of that relationship in patterns of social life, economic structures, politics, art, literature and popular culture' (Shaw 2008:4). Such relationships will be traced in both well threaded subject areas and more obscure ones. The acronym FLOSS (Free/Libre/Open-Source Software) is used throughout this text to describe the practices of collaborative software development, distributed under liberal licensing schemes like the GPL, BSD or MIT licenses. **Chapter 3.1** discusses the characteristics of FLOSS (DeLanda 2001, Williams 2002) and analyses it as a "recursive public" (Kelty 2008). This analysis is then extended in **Chapter 3.2** to netaudio (Michels 2009), that is the practice of publishing music on netlabels – Internet music labels which generally offer music downloads free of charge, mostly under the Creative Commons licenses (Galuszka 2009). It is important to note, however, that the practice of sharing digital artifacts pre-dates the creation of a global computer network. The demoscene which is also discussed in **Chapter 3.3** serves as an example of a computer art subculture that emerged from the practice of circumventing software copyright protections and developed its own aesthetics and a culture of sharing before the advent of the Internet (Borzyskowski 1996, Carlson 2009, Lysloff 2003, Rehn 2004). A discussion of the power struggles in the digital domain can benefit from looking at the counter-culture's appropriation of technology and its role in shaping the technological imaginary (Bey 1991, Dery 1996, Ross 1991). Such a discussion must necessarily include the role of the hacker ethic, libertarianist and anarchist ideals, as well as those of the government, academia and the military-industrial complex in the design of technologies and the formation of discourses around them. Additionally, any thorough analysis of the technological landscape must take the economic and political milieux into account. This includes new business models and practices (Anderson 2009), globalisation and the reconfiguration of markets and labour relations (Castells 2001, Hardt & Negri 2005, Turner 2009), class relations (Bauman 2003, Wark 2004), the alleged emergence of the "digerati" or "virtual class" (Barbrook & Cameron 2001, Purdy 2001) and the entanglement of all these issues in the commodity-driven

marketplace (Lunenfeld 2001). Music is an apt example of an area where such commodity relations are particularly visible and the way they shape the experience of music creation and appreciation can be analysed (Lysloff 2006, Théberge 1997). Finally a case has to be made about the general ontology of humans and technology and the ethical considerations that emerge from the reconfiguration of that ontology (Barad 2007, Stiegler 1998).

According to Lunenfeld 'those who contemplate the future/present should ground their insights in the constraints of practice, speculating *after* thorough investigations, not *before*' (2001:34, emphasis in original). Although it can be tempting to place the people, events and ideas discussed in this paper within the familiar frameworks of "society" or "community"; by doing so *a priori* one can place severe limitations on how the analysis unfolds and the vacuousness of much of the contemporary use of the term "community" pointed out by Bauman (2001) is testament to that risk. Rather than unnecessarily hastening the intellectual process by beginning with the highest level of abstraction, the mode of reflection proposed by Latour is:

> "to follow the actors themselves", that is try to catch up with their often wild innovations in order to learn from them what the collective existence has become in their hands, which methods have they elaborated to make it fit together, which accounts could best define the new associations that they have been forced to establish.
>
> ***(Latour 2005:12)***

He argues that by doing so the network of associations is progressively expanded while avoiding the haphazard leaps in analysis that often accompany sociological descriptions (Latour 2005:22). Schaefer (2008) recognises three scales of analysis:

- **on the micro-level, networks of human and non-human actants are analysed;**

- he uses the term socio-technical ecosystem to 'describe an environment based on information technology that facilitates and cultivates the performance of a plurality of users' (Schaefer 2008:30)
- finally the concept of dispositif or apparatus borrowed from Foucault links the macro-structure of discourses, people and technologies

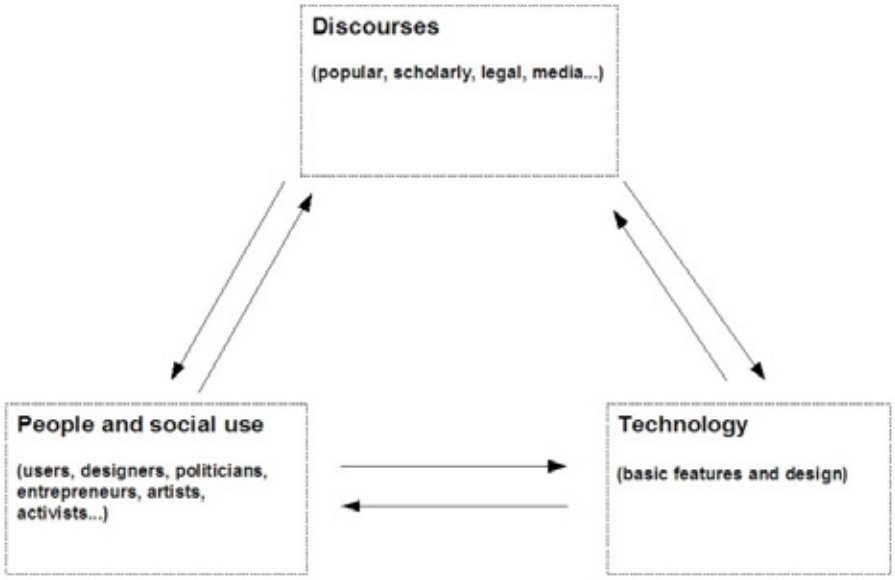

Fig. 1 (Schaefer 2008:27)

CHAPTER 2:

FIELD RESEARCH

The Live Performers Meeting held annually since 2004 has been the target of an empirical study conducted by the author during the 2010 edition which took place on the 27-30 of May at the Brancaleone in down-town Rome, Italy. The core of the material has been gathered through interviews with participants, participation-observation and documentation of events. As their website states, LPM is 'an international meeting of **live video performers**, **visual artists** and **vjs**, focused on live video performances' (LPM 2010, emphasis in original). As one of the interviewed participants Pierce Warnecke pointed out, terms like VJ or audio-visual performance point towards specific types of performance, constituting a heterogeneity of practices gathered under the banner of live video (personal communication, 29 May, 2010). The first part of this analysis **(Chapter 2.1)** is an attempt to delineate the network of actants in an audio-visual performance, starting with a two-person, laptop-based set-up and then discussing some of the practice-related issues that emerge from the use of different performance set-ups. **Chapter 2.2** shifts attention to the structure of LPM itself, the actors involved, strategies employed and the discursive layer of LPM, particularly the specific meaning of community.

2.1 ACTOR NETWORK

One of the lessons of Science and Technology Studies is the importance of studying the experimental set-up and the mindset of the experimenters in unison. While there is little reason to maintain an essentialist distinction between the human and non-human, this does not erase all differences between them. As Barad (2007:150-3) emphasises, the human and non- human are differentially constituted through their intra-actions, rather than pre-existing or being the end-products of inter-actions. For the purposes of this analysis, the distinction between **complexity**

(like that of primate-to-primate communication) and **complication** (in the iterative calculations of computers) drawn by Latour (1999) is employed to draw attention to the interfacing or intra-action of the human consciousness with the dynamic 'non- but pseudo-consciousness of the computer' (Lunenfeld 2001:24). It is important to emphasise, however, that this is not an attempt to anthropomorphise the computer. Doing so would be just as problematic as the set of presumptions that the cybernetic metaphor of the brain as a "biological computer" entails. To the contrary, such a distinction acknowledges the differential constitution of humans and computers, within their material-discursive constraints. The term "interface" is used here to describe 'the point of juncture between different bodies, hardware, software, users, and what they connect to or are part of' (Cramer & Fuller 2008:150) while "*intra*-action," as opposed to *inter*-action, is a term borrowed from Barad (2007) to underline the ontological inseparability of agencies. The reason for using this meticulously built set of neologisms is to avoid the linguistic traps associated with their more common counterparts. In the end, it seems to be come down to a choice between meaning-heavy but constraining language on the one hand, and unstable but potentially liberating language on the other. Barad's agential realism may not be immediately applicable to the discussed topic, in fact it requires a careful process of translation. It is only in combination that these conceptual tools help to provide an account of audio-visual performances that takes into consideration the peculiarities of both human cognition and technical artefacts.

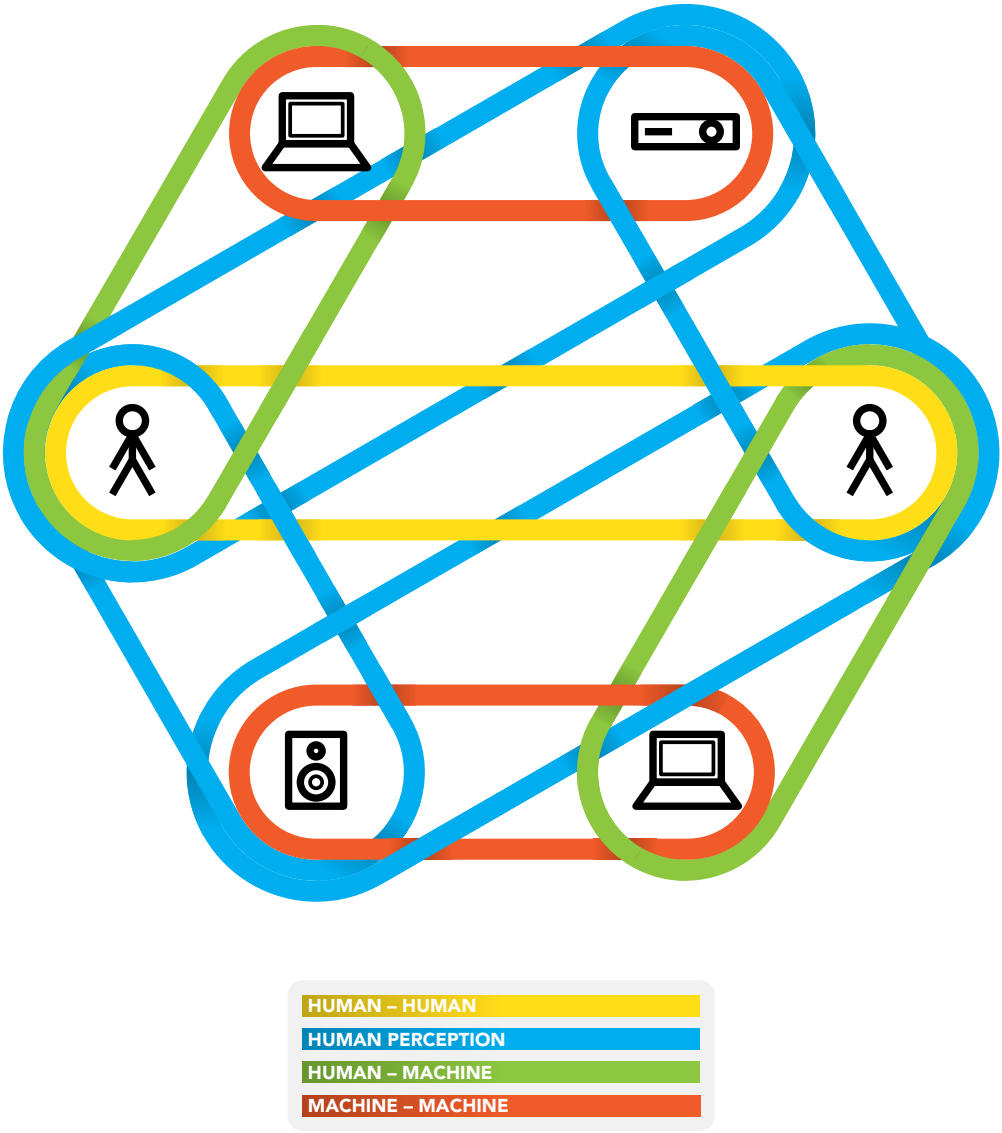

Fig. 2 illustrates the topology of relationships in a two-person, laptop-based audio-visual performance.

To follow Barad's (2007) terminology, rather than speak of independent objects and subjects, the basic ontological unit of the following analysis is the *phenomenon* (Barad 2007). In her framework 'phenomena do not merely mark the epistemological inseparability of observer and observed, or the results of measurements; rather, *phenomena are the ontological inseparability/entanglement of intra-acting "agencies."* That is, phenomena are ontologically primitive relations – relations without pre-existing relata' (Barad 2007:139, emphasis

in original). In other words, actants emerge *through* their intra-actions *within* the various phenomena of which they are part of. The difficulty of devising a graphic representation of such hybrid relations is substantial, therefore, a word of clarification is needed. Where "actants" are discussed, it is implied that they are agencies within a "phenomenon". The topology of actants and phenomena in **Fig. 2** is provisional and aims to provide an initial structure from which further configurations and sub-divisions can be devised. The temporal dimension of the analysis is set to the duration of the performance, although, it is important to note that such performances involve varying degrees of prior preparation and bear marks of previous intra-actions.

If one were to designate a single measure of an intra-action it would most likely be "responsiveness." The various actants respond to their intra-actions and by doing so contribute to their entangled becoming. The problem of "immaterial information" discussed in **Chapter 1** is resolved here, since each relationship is material-discursive and all "information flows" occur through intra-actions within material constraints.

Three main types of actors emerge through these intra-actions:

- **"human"**
- **computational ensemble**
- **wave-generating ensemble (sound and light)**

Four types of phenomena are distinguished:

- **the interfacing of human and machine**
- **the interfacing of machine and machine**
- **human to human intra-action**
- **human perception**

When one looks at the performance of playing an instrument like a violin, one can speak of the specific material-discursive qualities of the performer and the instrument and how both are responsive to each other – the performer is responsive to the material qualities of the strings and body of the violin, while the latter is responsive to the bodily performance of the former. The "music," however, is a 'quasi-object' (Born in Hansen 2007) that emerges only through the intra-action of both and is therefore not a sole property of either. In addition, humans 'must also be understood as phenomena, produced through the intra-action of multiple material-discursive apparatuses of bodily production, and "consciousness" cannot be presumed to be an inherent property of individuals' (Barad 2008:172). In the discussed example of the audio-visual performance, the "outcome" that a potential audience may perceive is dependant on multiple simultaneous intra-actions.
The malleability of the computational and wave-generating ensembles means, that they can be broken down into parts of varying complexity – they undergo different degrees of black-boxing. The **wave-generating ensemble** refers to the sets of devices responsible for making the signal received from the **computational ensemble** (the laptop and the various devices it interfaces with) intelligible to humans. Focus is placed on wave generation simply because it is the sound wave generated by the vibrating membrane of the speaker and the light of various wavelengths emitted by a display or reflected off a projector screen that enables the reception of the performance by a human audience. The human element is necessary here because the categories of music or visuals emerge only through a specific intra-action involving humans. While the idea of "music for computers" may have an artistic or theoretic appeal, it is considered irrelevant for the purposes of this study. However, this does not mean that the presence of the human is necessary for all of the analysed relations, as human intellect is not considered a prerequisite for responsiveness itself. What is referred to here as **human perception** are the intra-actions of multiple sensory apparatuses of bodily production with the environment, in this case those crucial for sight and hearing.

The analysis could begin with a relationship which seems most familiar from the

standpoint of traditional artistic agency – bodily performance. However, in the case of computer-based performances, this essentially means **interfacing with the computer** via the various possible types of input devices. But just like the human does not pre-exist as a finite subject but is in a constant state of becoming through multiple apparatuses of bodily production, the laptop operates on multiple layers, constantly re-iterating itself with the cycle of its internal clock. What happens beyond the black-box of the laptop case cannot be omitted. **Fig. 3** illustrates the multi-scalar structure of the **computational ensemble** in a performance set-up.

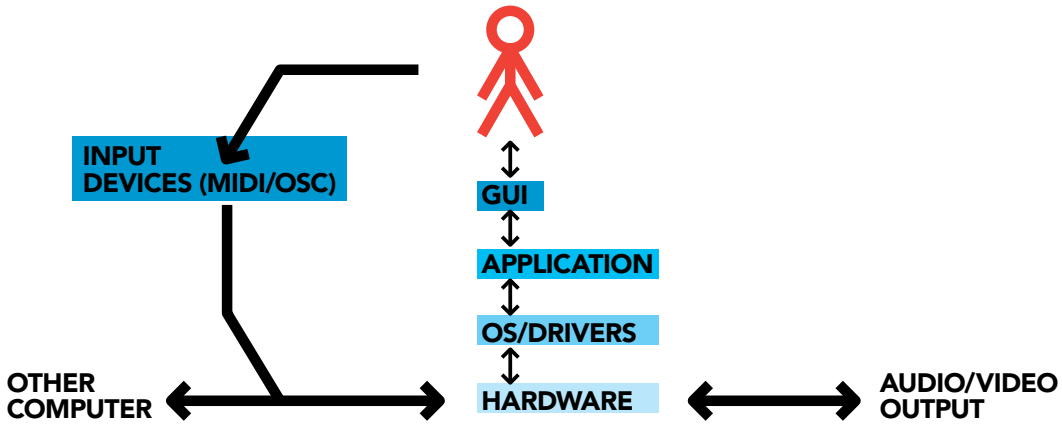

Fig 3. The multi-scaler overview of the computational ensemble

It is customary to describe the structure of computers as multiple layers, beginning with Graphic User Interfaces at the top and progressing down the software stack to the basic hardware components. Whilst this is a useful model, it is important to bear in mind the insight of Kittler's (1995) seminal essay *There Is No Software* that all high-level software operations can be reduced to local string manipulations and ultimately to voltage differences. A consequence of the multi-scalar nature of computation is that:

> far reaching chains of self-similarities in the sense defined by fractal theory organise the software as well as the hardware of every writing. What remains a problem is only the realisation of

> these layers which, just as modern media technologies in general,
> have been explicitly contrived in order to evade all perception.
> We simply do not know what our writing does.
>
> ***(Kittler 1995)***

The GUI is the most familiar of all computer layers. We have become comfortable with performing the rather Pavlovian symbolic gestures of clicking, scrolling, dragging and dropping within a two-dimensional pseudo-space. But as Cramer & Fuller lucidly remark, 'interfaces describe, hide, and condition the asymmetry between the elements conjoined' (2008:150). The GUI via symbolic gestures provides access to a number of variables, application states and operations, all selected by the developers of the application. While the possibilities may seem negotiable through various "preferences" and "options" windows, ultimately the experience of operating a GUI can be likened to an experiment in behavioural psychology – internal states are irrelevant, only externalised "behaviours" are observable. As Chun puts it, 'users may navigate and control software interfaces, but this control compensates for, if not screens, the lack of control they have over their data's path' (2006:46). It is noteworthy that GUIs notoriously remediate familiar environments, the metaphor of the computer desktop remediating the office space being a particularly well known one (Bolter & Grusin 2000). Other examples can be given: Digital Audio Workstations remediate the recording studio environment; the content-agnostic data-flow programming languages like MAX/MSP or PureData discussed by Puckette (2007) remediate modular analogue audio and video synthesisers, their GUIs remediating patch bays and cables with their symbolic representations. The imaginary relationship with hardware that GUIs and especially the Operating System offer, parallels the construction of user identity. For Chun (2006:20-21) that identity is created both in the way Microsoft or Apple advertisements present an image of a Windows or Mac user, and within the OS itself through the constant use of pronouns like "my" and "you" and careful branding (the penguin ubiquitous in GNU/Linux is no exception). What all of these

different issues point to is the material-discursive nature of the computer. At no point is it "just technology," as it bears the marks of all its intra-actions, hybridised in design and affordances. *Coal Fired Computers (300,000,000 Computers – 318,000 Black Lungs)* by Harwood, Yokokoji and Denmars is a project which demonstrates how far an exploration of these relationships can go by establishing a link between computers, the coal mined and burned to supply electricity for their operation and manufacturing and lung disease caused by coal dust:

> The common perception is that wealthy countries have put this all behind them, displacing coal dust into the lungs of unrecorded, unknown miners in distant lands, however coal returns into our lives in the form of the cheap and apparently clean goods we consume.
>
> ***(Harwood in Fuller 2010)***

As this example shows, technological artifacts bear marks which are not immediately obvious. Of course, the user may also have little or no interest in learning such intricacies. Kittler emphasises that 'the so-called philosophy of the computer community tends to systematically obscure hardware by software, electronic signifiers by interfaces between formal and everyday languages' and 'in all philanthropic sincerity, high-level programming manuals caution against the psychopathological risks of writing assembler code' (1995). Part of the success story of personal computers lies in the huge effort by the designers, engineers and programmers to make the learning curve easier. Hence the remediations of familiar settings and concepts are so prevalent. Tracing the history of computation reveals that the very concept of software has changed over time and the abstraction of software from hardware has made its commodification possible. However, because of the ease with which code and software binaries can be transferred from machine to machine, the functioning of software as a commodity rests on sustaining the condition of artificial scarcity (Anderson 2009:83). This is achieved through the

framework of intellectual property law and the implementation of copy-protection measures through software design. However, because these methods of sustaining the condition of artificial scarcity are in opposition to the affordances of software, one of the methods of user appropriation takes the form of circumventing software protections and facilitating the distribution of the modified copies (this practice is discussed in **Chapter 3.3**). As Fuller remarks, software 'gains its power as a social or cultural artifact and process by means of a better and better accommodation to behaviours and bodies which happen on its outside' (2008:5). The performance discussed here is but a cross-section of the dynamic process by which software is refined and articulated in culture. Because of this richness of meaning embedded in technology the cybernetic descriptions found in computer science seem inappropriately dry (Cramer 2005). Bearing this in mind, the remainder of this section will attempt to show the dynamics of an audio-visual performance by focusing on the issue of synchronisation.

The synergy between audio and video in this kind of performance can be attained by a number of aesthetic procedures such as the coupling of certain sonic qualities like timbre, grain or key with visual qualities like colour, shape or texture. However, what often proves to be paramount in determining performance cohesion is the timing or synchronisation. In an instrumental musical performance tempo is established as a collaborative effort as each musician is responsive to their own performance and to that of others. While some elements like percussion may be placed higher in the hierarchy, rather than speak of a single tempo, numerous tempos co-determine each other. They can be perceived as one, but any individual fluctuation that crosses the threshold of perception breaks that unity. Such a **complex** form of tempo which results from **human to human intra-action** and depends on accurate **perception** undergoes a change once mechanical or electronic forms of measuring time are introduced. In the case of the mechanical metronome, its design and affordances facilitate the production of tempo-cues – sound events (the "tick") or motion (the pendulum swing). Because these cues are produced at a fixed rate, the construction of tempo becomes non-negotiable. While the process

of interpreting the cues results in fluctuations in tempo, the metronome tempo does not respond to them. In a way, the musicians must discipline themselves into adherence to the rigid regime of mechanical tempo-keeping.

Since the 1980s the *de facto* industry standard for networking electronic instruments has been the Musical Instrument Digital Interface (Rothstein 1995, Théberge 1997). In this case tempo is maintained iteratively and is facilitated by a **machine to machine interface**. The development of the Open Sound Control protocol further develops the paradigm of networked musical performance by streamlining it for networks of computers (Wright 2005). This means that the control of tempo may be delegated to hardware and a potentially large number of devices can be synchronised. Two issues must be clarified here. First of all, the synchronisation is not instantaneous. As Wright reminds us, 'latency, defined as time delay between the sending and receiving of a message, is unavoidable' (2005:195). The following table summarises acceptable latencies for various musical tasks.

Task	Acceptable latency (ms)	Distance sound travels (m)	Distance light travels (km)
Traditional "real-time" latency limit for real-time interactive music	10	3.34	2998
Maintaining tempo in ensemble playing	20	6.86	5996
Playing "together" for chamber music	50	17.15	14990

Table. Latency limits (in milliseconds) for various musical tasks, and the corresponding distances travelled by sound and light in that amount of time (Wright 2005:195).

Secondly, the master tempo is not the only variable that can be synchronised. MIDI, and to an even greater extent OSC, allow for the transmission of entirely non-musical data. The fact that they can be appropriated to perform idiosyncratic tasks points to the ongoing creative tension between *affordances, design* and *appropriation* (Schaefer 2008:31). Therefore, to say that 'given a system composed of networked computers, the architectural questions are what each computer's role will be and how they will communicate' (Wright 2005:194) can be generalised as: "what are the affordances of networked computers, what are their design features and how can they be appropriated?" These questions can, and indeed should, be asked about each technical element, precisely because 'when it comes to digital material, the lines separating objects, actions, and actors are hard to draw, as they are hybridised in technological affordances, software configurations and user interfaces' (van Den Boomen et al. 2009:10). The fact that the live bodily performance of manipulating the pads, buttons, knobs and sliders of a MIDI controller is just one of the many possible streams of control data in the performance lends credibility to claims of the breakdown of traditional Western notions of artistic agency. In light of the various features of computer-based performances discussed here, it is perhaps more plausible to see agency as hybridised or distributed, however black-boxed it may appear from the perspective of the audience. It is an often repeated cliché that laptop performers look as if they were "checking their email" and where easy audience access is possible, the practice of looking over performers' shoulders at their laptop screens and at their performance set-ups seems to be employed. While a separate study would be needed to properly analyse these emerging audience behaviours, one can wonder about the extent to which they can be seen as a substitution for the relative uneventfulness of bodily performance. However, such alternative involvement can also be seen as a form of peer review, especially in a setting like the LPM where a significant part of the attendants have above-average know-how and interest in the transfer of skills and knowledge. Within this model of potential performance set-ups the VJ/DJ act is a special case where most of the possible technical interfaces that aid synchronisation are not used. While

Fast Fourier Transform analysis which translates audio signal into numerical data may be employed, the general level of computational interdependence is low. The question of data exchange and synchronisation turned out to be a sensitive issue among the interviewed performers. Since the use of a statistically insignificant sample undermines the plausibility of performing quantitative analysis, the interviews serve primarily as indicators of themes that constitute the discursive element of technocultural art. The use of quantitative methods would have certainly allowed for plotting their importance more accurately and such an objective could be included in future studies. What the interviews seem to confirm, however, is the observation that the LPM gathers a heterogeneous group of participants. In the words of VJ Klat, 'there are "coders" and "imagers" somehow' (personal communication, 29th May, 2010). He bases this distinction on two approaches to the creative process. In the case of the former, the code precedes the image (as in 3D renders, generative 2D animations *et al.*). The latter starts with the image – a photograph or film. While this distinction may seem valid at first, because it values the latter it also seems to oddly mutate Benjamin's (1968 [1937]) idea about the loss of aura through the mechanical reproduction of art. However, this time the aura of the photograph or film is preserved even as it goes through multiple digital editing procedures, whilst with generative graphics there was no aura to begin with.

> Everything is becoming too mechanical. This is an occasion to say what I think about these live sets. Well they're not live sets. OK, you push the play button and there's too much interaction, electronic interaction. The human side is put aside sometimes.
>
> ***(VJ Klat, personal communication, 29th May, 2010)***

> ...there is a sort of duality to audio-visual performance and, on one side is the classic DJ–VJ type of thing, it's questionable just

> how much of it is created in real-time and so I am personally more interested these days with someone who is creating in real-time and it's happening.
>
> ***(Warnecke, personal communication, 29th May, 2010)***

These two approaches also indicate different understandings of "liveness." In the case of VJ Klat live performance becomes synonymous with live bodily performance. For Warnecke, however, live means real-time (generative).

> I dismiss using line-in and all the kinds of connection, so it's going in an analogue way from the ear to the fingers. OK, in the end it depends on the occasion. If it's a live set, because a live set is not a live set as we've said before, you should use MIDI because what people are looking for in those kinds of performances is that sync, that fucking sync.
>
> ***(VJ Klat, personal communication, 29th May, 2010)***

> If work is not done live, at least you know there is work done there at some point. When I see an audio-visual performance and the video is amazing and the audio is great, the person isn't really interacting and performing – I don't care as much as I used to. I used to think it's annoying and now if the result is good then I don't mind.
>
> ***(Warnecke, personal communication, 29th May, 2010)***

The spectrum of software and hardware set-ups also entails a spectrum of ideas about the nature of artistic performances themselves. What the conceptualisation of computational performances in terms of post-humanist performativity has demonstrated, is that maintaining the simple oppositions of subject/object and

technology/culture becomes increasingly difficult. The distribution of agency within a performance and particularly the delegation of some artistically relevant functions to computer automation can sometimes cause anxiety; but only when viewed through the lens of the humanist subject. However, returning to Latour's distinction quoted at the beginning of this chapter, the audio-visual performances seem to back up the idea that 'contemporary societies may be more **complicated** but less **complex** than older ones' (1999:304, emphasis added).

2.2 DISPOSITIF

The previous chapter provided an attempt to describe the degree of entanglement with technology that computational audio-visual performances entail. The next step is an analysis of the Live Performers Meeting in terms of its organisational structure, the involvement of different actors and kinds of observed intra-actions. The event took place in Brancaleone, a well-established social centre with a long record of cultural, social and political activities (Brancaleone 2010). While the performances described here aim for a kind of unity of the two sensory domains, in live video practice a number of asymmetries can be discussed. For example, in the club scene the position of the VJ is not as well established as that of the DJ and this is expressed on a number of levels. First of all, the visual performance can be seen as mere "eye candy," and therefore not warranting as much attention as the musical performance. In monetary terms, VJs are notoriously paid less than the musical performers while simultaneously being often expected to work much longer. Stories of VJs performing for the duration of entire parties, followed by extreme fatigue, little recognition and compensation have become part of VJ folklore. It is perhaps not surprising that the issue of improving the image of VJing and consequently of legitimating the equal status of video and audio performers has been on the agenda. In addition to performers, a number of other actors have been participating in the LPM. This includes software developers and hardware manufacturers showcasing their products but also lecturers giving expression of the "spirit of freedom" in

digital communications as the LPM website describes it.

The cohesive element of communities in the traditional sociological sense is security (Bauman 2001:4). But what needs to be analysed is the extent to which such a category is applicable to cultural production which involves a significant technical infrastructure. Certain problems with analysing online cultural production may signal that a re-conceptualisation of the meaning of community may be necessary. According to Schaefer, in such a context the metaphor of the community 'is often used as the equivalent for the social constellation of the family, friends or neighbourhood communities in real life in order to describe social interaction and the construction of meaning in virtual life. In light of information systems, which are used by a large plurality of people who often do not communicate [with] each other, the term "community" is no longer sufficient to explain online cultural production' (2008:28). Although the LPM physically gathers people in one location, outside of the of the festival network a significant part of the day-to-day communication occurs on the Internet (Mowgli, personal communication, 28th May, 2010). When looking at the rationale expressed by participants in the LPM, the need for security is not explicit, rather, the transfer of knowledge, skills, and mutual inspiration seem to be on offer. This transfer is either formalised as the various workshops offered for the participants or takes place informally through dialogue and observation.

Based on the conducted interviews, the following practices can be attributed to the live video community:

- **Development of new techniques, sharing knowledge and skills, more experienced participants assuming the role of mentors**
- **Maintaining the technical infrastructure of sharing: Internet forums and other websites**
- **Physical gatherings as ways to express progress in the field, facilitating self-expression**
- **Initiating a dialogue between participants, receiving feedback**

Perhaps it makes more sense then to see the LPM as an "aesthetic community" in Bauman's sense. For Bauman (2001:66) what he calls aesthetic communities are constituted by the need to construct or deconstruct identity, not by the need for establishing community. He describes these aesthetic communities, or what he alternately names "peg communities", thus:

> Whatever their focal point, the common feature of aesthetic communities is the superficial and perfunctory, as well as transient, nature of the bonds emerging between their participants. The bonds are friable and short-lived. Since it is understood and has been agreed beforehand that they can be shaken off on demand, such bonds also cause little inconvenience and arouse little or no fear.
>
> ***(Bauman 2001:71)***

However, it is not just a matter of the strength or duration of the bonds that is the issue here. For example, Granovetter (1983) emphasises that the value of weak ties is often understated. Castells emphasises the need to distinguish identity from roles and role-sets (1997:6). While roles 'are defined by norms structured by the institutions and organisations of society,' identities 'are sources of meaning for the actors themselves, and by themselves, constructed through a process of individuation' (Castells 1997:7). The link between identity-seeking and consumerism is elaborated in **Chapter 5**.

CHAPTER 3:

TECHNOCULTURE: FLOSS, NETLABELS AND DEMOS

As **Chapter 2** has demonstrated, the study of technologically intensive social settings often requires specialised technical knowledge. As agency becomes increasingly hybridised Penley & Ross' (1991) call for "technoliteracy" seems to gain even more importance. They see such a faculty as 'a crucial requirement not just for purposes of postmodern survival but also for the task of decolonising, demonopolising, and democratising social communication' (Penley & Ross 1991:xvi). According to Shaw:

> the study of technoculture...must necessarily engage with the sense in which changes in the technologies which are an inseparable part of our social worlds, also produce changes in how we conceive of *ourselves*.
>
> ***(2008:14, emphasis in original).***

What follows is a discussion of three contemporary technocultures: Free/Libre/Open Source Software, the netlabel scene and the demoscene. All three are centred around cultural production using digital technologies, albeit in different ways. The collaborative mode of production of FLOSS has been called "commons-based peer production" (Benkler and Nissenbaum 2006, Turner 2009); in the netlabel scene the key feature seems to be the collaborative network of distribution; finally, the mode of cultural production in the demoscene could be called "competitive". One characteristic of commons-based peer production emphasised by Turner (2009:76-77) seems to apply to all three: that if the cultural production itself does not bring monetary compensation, the work and effort put into these technocultures must be subsidised elsewhere. Understanding this is important, because all too often the analysis of such technocultures focuses solely on the non-monetary

compensation on offer: reputation or increased visibility. What the discourse of "commons" and the special sense of community associated therewith obscure, are certain asymmetries removed from sight by the illusion of a levelled playing field. Therefore, this chapter attempts to critically examine some of the characteristics of these technocultures and locate them within the emergent '*reorientation of knowledge and power*' (Kelty 2008:6, emphasis in original).

Since the Internet is the medium of many of the practices discussed here, it is necessary to see its development as a network of actors, rather than take it for granted. Much like software which 'has always had a parallel genealogy including the amateur, academic, gratuitous, experimental, and free' (Fuller 2008:3), supplying a satisfyingly exhaustive list proves to be difficult. As Weinberg (2002:x) puts it, a "unified theory of the Web" is similar to the unified theory of physics inasmuch as both are non-existent. An attempt made by Chun (2006) in Control and Freedom, while not flawless, directs attention towards an important set of events and actors. According to Chun:

> The Internet ... emerged as a medium (to end all mass media) through a particular stage of forces: the U.S. government's long-standing support of the Internet as a military and research network, and its decision in 1994 to privatize the backbone; the concurrent imagined and real expansion of technologies such as virtual reality (VR); the conflation of the Internet with cyberspace; a thriving personal computer and software industry, which was able to slash prices through outsourcing to Asia and Mexico; interest by various media companies and telecommunications companies in merging and expanding their markets (made possible through the Telecommunications Act of 1996); technological advances that made the Internet more image friendly (Web, image-oriented browsers); and extreme coverage in other mass media. All these forces, combined with

> these theory-come-true moments, turned a network cobbled together from remnants of military and educational networks into an electronic marketplace, a library, an "information superhighway," a freedom frontier.
>
> ***(Chun 2006:25)***

3.1 FLOSS

> "Don't you see?" Stallman said. "That's exactly why I'm doing this. I want a signal victory. I want them to make a choice between freedom and business as usual."
>
> ***(Williams 2002:191)***

The disputes between actors like Stallman, Raymond and the software industry have been well documented and discussed elsewhere (DeLanda 2001, Williams 2002). What is relevant here are the insights which can be helpful to the analysis of technocultures in general. In terms of the triad of affordance, design and appropriation it can be said that the mode of cultural production employed in FLOSS is one that:

- **recognises the affordances of software (its modularity, the ease with which it may be copied)**
- **designs in a way that encourages redesign and appropriation (well documented code, an open legal framework)**
- **the lack of constraints on use enables widespread appropriation and encourages user involvement in design**

These characteristics of FLOSS relieve some of the tension caused by the artificial creation of scarcity, understood here as design features which aim to limit uncontrolled appropriation. However, this situation results in increased tension between FLOSS and the commercial software industry. The problem of intellectual

property is aptly summarised by DeLanda who writes that 'when goods which are not rivalrous in consumption are made subject to property rights, the exclusion aspect of these rights generates social waste: given that additional copies of a given good may be generated and distributed at virtually no cost (this is particularly true of goods in digital form) excluding people from them means that wants will go unsatisfied, wants that could have been satisfied at very little cost to society' (2001). However, as Turner's (2009) insight mentioned earlier has revealed, for people to engage in writing software they need direct or indirect subsidy. For DeLanda then 'the problem of intellectual property needs to be solved by a careful balancing of social costs and producer benefits, a balance which must be achieved case by case' (2001). The incompatibility of the legal frameworks of Free Software (the "open" model) and traditional copyright (the "closed" model) makes such careful negotiation particularly difficult. The copyright restrictions and unavailability of source code in the closed model make its developments of little or no use for FLOSS developers. Additionally, the legal hack employed in the General Public Licence which requires that any work building upon a GPL piece of code be licensed with GPL as well, makes GPL licensed code of little or no use to closed software development; incorporating GPL code into their own software would jeopardise its status and transfer it into the open domain. It is important to note that there are other Free Software licenses besides GPL like the Berkeley Software Distribution that do not contain such a clause and while the two frameworks may be legally incompatible, this does not allow for making a clear division between two opposing camps. The rhetoric of freedom versus tyranny is a naïve one and it obscures too many details. As Chun points out, FLOSS leaves 'uninterrogated the question of proprietary hardware and structures of inequality that make it impossible for a good number of workers who create hardware to access software, open or not' (2006:72). Schaefer observes that GNU/Linux and open-source are 'perceived as transparent, democratic, fair, beneficial to society, and inherently anti-commercial' (2008:231), even though this is not an entirely accurate portrayal. What is of most importance here are the practices and attitudes developed within

the world of FLOSS development and their application elsewhere. Kelty (2008) refined these practices into the concept of the "recursive public" and he describes it as:

> a public that is vitally concerned with the material and practical maintenance and modification of the technical, legal, practical, and conceptual means of its own existence as a public; it is a collective independent of other forms of constitutive power and is capable of speaking to existing forms of power through the production of actually existing alternatives.
>
> ***(Kelty 2008:3)***

The proclaimed independence from power is problematic, however, and Kelty clarifies that 'it is provisional and structured in response to the historically constituted layering of power and control within the infrastructures of computing and communication' (2008:9). While not entirely autonomous, the issue of recursive publics can be linked with Penley & Ross' category of protopolitical technoculture, that is 'the complex psychosocial process by which people, either individually or in groups, make their own independent sense of the stories that are told within and about an advanced technological society' (1991:xv). Sheikh suggests that the trans-national concept of a public sphere should be seen as post-public, that is 'a double movement of dematerialisation and expansion of what could be considered public, affecting both our most local concerns and private senses of being, as well as trans-national economic flows and spaces of production and the geopolitical' (2008:35). In other words, this double movement is similar to the "glocalisation" described in political science; the global and the local become closely related to each other (Swyngedouw 2004).

3.2 NETLABELS

The way in which the global computer network relates to the individual artistic practice of individuals scattered around the globe is clearly visible in the netlabel scene. Similarly to FLOSS, the recognition of the non-rivalrous nature of digital artifacts lies at the core of most netlabels. Since there has been enough celebratory texts on netlabel culture, this analysis will only focus critically on a few selected issues. Galuszka's (2009:8) research results indicate that a great majority of netlabels publish music under Creative Commons licenses. While the massive popularisation of Creative Commons licences can certainly be seen as a success story, like with FLOSS, some issues remain highly problematic.

Regardless of the benefits that liberal licensing may give to culture in general, media companies now have access to a huge archive of media texts whose authors have explicitly allowed for their royalty-free incorporation into commercial projects (this is the case with licences that do not contain the Non-Commercial and No Derivative Works clauses). While it is difficult to speculate over the possible figures, the potential gain in terms of free labour for the cultural industries is noteworthy. As Schaefer (2008) elaborates, there has been a shift in the cultural industries from the creation of content to the building of infrastructures for user-generated content. From the perspective of the artists and netlabels, the fact that their work is 'ambiguously useful' (Schaefer 2008:217) to the culture industry is an unintended and often unrealised consequence. However, the argument that Creative Commons functions as an extension of the cultural industries lies at the core of Berry & Moss' (2005) critique. They 'find an organisation quick to accept the specious claims of neo-classical economics, with its myopic "incentive" models of creativity and an instrumental view of culture as a resource' (Berry & Moss 2005:1-2).

Some paradoxical situations can be observed in Creative Commons licensed media texts themselves. It is not uncommon to encounter music licensed with the No

Derivative Works condition which prohibits building upon the work, that itself builds substantively on the copyrighted work of others through sampling. While depending on the jurisdiction sampling may be considered fair use, the application of such double standards still seems disingenuous.

Netlabels, like FLOSS developers, are involved in the production of alternatives. The production of these alternatives comes from a realisation of the affordances of the digital medium. But whilst netlabels are a genuine alternative to listeners and musicians who can afford to forfeit the prospect of direct monetary subsidy (because their work is subsidised elsewhere; netlabels may help increase revenue from other sources like live performances), they have little to propose to those who record music for a living.

3.3 DEMOSCENE

FLOSS and netlabels contribute to the power struggle in the digital domain mainly through the production of alternatives. The third technoculture discussed here, however, gains power through deligitimising the framework of artificial scarcity itself. The contemporary demoscene can be seen as a spectrum of practices, from the production of demos (Borzyskowski 1996), through demoscene music (Lysloff 2003) to the warez scene (Rehn 2004). Their common origin lies in the practice of circumventing software copy protections and the subsequent distribution of the "cracked" software. It became customary for the authors of the modification to prepare an "intro" - a short animation sequence coded into the software – which in addition to having a certain aesthetic value would also acknowledge the author's identity and group allegiance. Over time, as intros became more and more elaborate, their development detached from the cracking of software and became a practice by itself. "Demo," short for demonstration, refers to this real-time, audio-visual presentation, usually produced by groups of people in order to show them at special scene events. Whilst the demo scene as an artistic and computer culture meets regularly at these events, the warez scene because of its clandestine activities

can mostly be traced by its produce: the cracked software and the texts included with them (Rehn 2004:361).

One way of contextualising the cultural production of the demoscene (and of FLOSS and netlabels, for that matter) is through the idea of a gift-economy. However, it is questionable to what extent gift-giving in the demoscene creates the urge to reciprocate the gift. Since this condition for the functioning of a gift economy (Godelier 1999) is not met, it is perhaps more plausible to see the competitive cultural production in terms of an economy of reputation. This applies to both the production of demos and the re-appropriation of software as warez. Borzyskowski observes that 'within the demo scene the audio-visual cultural artifact produced has become a currency. It is a means of transaction not only for the expression of a set of aesthetic ideals but also for the claiming of status and respect within a transnational community' (1996). For Rehn, members of the warez scene 'engage in a ritual form of economic rivalry. In this, transactions are made into expressive and dramatised spectacles, with great symbolic importance attached to defeating a rival' (2004:362).

In comparison with FLOSS and the netlabel scene, the warez scene wields arguably greater symbolic power. This is because it simultaneously legitimises its own illegal activities as a culturally acceptable practice and delegitimises the idea of intellectual property through appropriation and dissemination of copyrighted content. This expressed mastery over technology (Borzyskowski 1996) is innocuous play when achieved through the demo, however, in the warez scene it creates a directly threatening alternative to the established software and culture industry.

CHAPTER 4:

TECHNOLOGY AND COUNTER-CULTURE

For Borzyskowski 'the ability to manipulate technology as evident in the demos and intros and the rapidity with which software copy protection schemes are cracked sits comfortably alongside a cyberpunk creed which declares oneness with technology' (1996). As Dery (1997) writes in *Escape Velocity*, the American counter-culture was quick to embrace the liberatory rhetoric in relation to the Internet and other hi-tech developments, inspired by an odd mix of science-fiction and techno-utopianism of various sorts. As Ross argues, the counter-culture of the 1960s was based on a "technology of folklore" - 'an expressive congeries of preindustrialist, agrarianist, Orientalist, antitechnological ideas, values, and social structures' (1991:120). Ross contrasts it with the present "folklore of technology" - 'mythical feats of survivalism and resistance in a data-rich world of virtual environments and posthuman bodies' (1991:120). Perhaps the fiercest opposition to counter-culture's celebratory carnival seems to have come from one of its most respected authorities – the writer Hakim Bey. In his own words, 'the squabbling ideologues of anarchism & libertarianism each prescribe some utopia congenial to their various brands of tunnel-vision, ranging from the peasant commune to the L-5 Space City' (Bey 1991:46). Recognising that 'technologies in themselves provide no "determined" guarantee of their liberatory use' (Bey 1991:44), Bey resurrects the concept of Luddism as a tactic. He writes that 'if a given technology, no matter how admirable *in potentia* (in the future), is used to oppress me here & now, then I must either wield the weapon of sabotage or else seize the means of production (or perhaps more importantly the means of *communication*)' (Bey 1991:44-45, emphasis in original). Although in common parlance "Luddite" has gained an almost exclusively derogatory connotation, Robins & Webster exorcise it as 'an attempt by working people to exert some control over changes that were felt to be fundamentally against their interests and mode of life' (1999:46). However, they also emphasise that as a reaction to capital, it was 'appropriate to the early nineteenth century'

(Robins & Webster 1999:39). Nevertheless, there are parallels between nineteenth-century Luddism, Bey's "tactical Luddism" and Ross' "technoskepticism." These links are elaborated in the following chapter.

CHAPTER 5:

TECHNOLOGY AND THE MARKETPLACE

What links these three modes of resistance is the dual rhetoric of progress and the "techno-fix." The original Luddites were denounced as enemies of progress, understood narrowly as the development and introduction of new technologies of production. As Ross' and Bey's skepticism indicates, the notion of progress continues to permeate the technological landscape. However, one insight that can be learned from Stiegler (2010) is that technology can be viewed pharmacologically. Just as a doctor's decision to prescribe a medicine is dependent on a deliberation on whether the benefits outweigh the side effects, the deployment of technological solutions poses a similar dilemma of weighing the pros and cons (understood as affordances and design features). This is of course a crude simplification of Stiegler's argument but it nevertheless destabilises the discourse of the techno-fix by shaking its teleological pillars. How can there be an techno-utopian end-point if each new solution generates new problems? To understand how the belief in the technological entelechy aids in justifying the infinite and indefinite expansion of the current mode of industrial production and social stratification, the discourse of technological progress must be analysed in conjunction with the capitalist imperative of economic growth. Robins & Webster signal such a link when they say that 'just as Marx theorised commodity fetishism in capitalist society, so too we can refer to a "technology fetish" to understand the way in which capitalist technology assumes the form of a discrete and reified entity, with its own autonomy and momentum, entirely separate form the rest of society, and to which that society must react' (1999:51). However, as this dissertation has demonstrated throughout, the notion of technology being separate from culture is illusory. As Ross puts it, 'there is no frame of technological inevitability that has not already interacted with popular needs and desires, no introduction of new machineries of control that has not already been negotiated to some degree in the arena of popular consent' (1991:130). Therefore, crucial to this analysis is the process by which this dual

nature of "progress" has emerged.

Bauman's (2003) essay *Industrialism, Consumerism and Power* expands on the Foucauldian analysis of disciplinarity by linking the emergence of disciplinary power with the crisis of the communal framework. The ongoing centralisation of the state and the resulting erosion of local governance, coupled with a demographic explosion meant that a new stratus of people has emerged; people who could not be catered for within that communal framework. The sovereign whose role so far was simply to secure the 'upward flow of surplus resulting from an essentially autonomous productive activity' (2003:56) could not adequately respond to the breakdown of the framework that allowed that productive activity to take place. According to Bauman, what follows is 'a total re-definition of the relationship between the top and lower regions of the social hierarchy' where 'the function of the new hierarchy was more than anything else to assure the reproduction of a form of life compatible with the continuation of the hierarchical order' (2003:56). What he observes from the seventeenth century onwards is 'the shift of disciplinary power from the area of community reproduction into that of the reproduction of class hierarchy' (Bauman 2003:56) and the application of this power to the newly redundant and the poor. What is perhaps most insightful in Bauman's story, is how the first factories fit into this framework and it is worth quoting the following passage at length:

> There is more than sufficient evidence...that the first factories were perceived by their contemporaries as another variety of poor- or workhouses, and their owners as sui-generis agents of authorities, making the communal task of the care for material and spiritual welfare of the poor their responsibility, and thereby simultaneously relieving the local taxpayer from an excessive financial burden and promising to secure the sought-after control over the bodies of potential rebels as well as morally regenerate their souls. Labourers of the first factories (in most

> cases women and children) were more often than not delivered to the willing entrepreneurs direct from the parish-supported poorhouses, and kept there by force by the same guardians of order whose task it was to chase and capture runaway inmates of workhouses. Gains in productivity (indeed, the productivity activity itself) made possible thanks to subjecting a large number of labourers to the uniform rhythm of bodily action were, in public view at least, secondary to the direct gain in the efficiency of control achieved thanks to the close supervision and minute regimentation of life-processes in the factories and attached dormitories.
>
> ***(Bauman 2003:57)***

Henry Ford's now infamous Sociology Department and the Ford Profit Sharing Plan's paternalistic coupling of wages with adherence to 'a proper "American" style of living' (Meyer 1998:325) does not, therefore, stand out as an unique occurrence. Whilst the labourers, both the poorhouse inmates in Bauman's example and the immigrant workers of Ford Motors, were subjected to "raw" disciplinary power, a different approach had to be taken in relation to the skilled workers – their compliance 'with the demands of factory production had to be bargained for. It had to be bought tit for tat, more money for more discipline' (Bauman 2003:58). In other words, power conflict has become economised and Bauman describes this process as:

> the trade-off between the acceptance of the stable asymmetry of power and heteronomy inside the productive activity, and the rendering of the share in surplus open to contest. Money becomes a makeshift power substituted for the one surrendered in the sphere of production; while the experience of unfreedom generated by the conditions in the workplace is re-projected

> upon the universe of commodities. Correspondingly, the search for freedom is reinterpreted as the effort to satisfy consumer needs through appropriation of marketable goods.
>
> ***(Bauman 2003:58)***

The fact that Bauman's genealogy of consumerism leads back to the breakdown of communality is remarkable, as commodities play a crucial role in the constitution of what is now considered to be communities. Lunenfeld (2001:4-5) points to the commonality of tools as the major cohesive factor in technocultural communities, what he calls "commodity camaraderie". In its most obvious guise, this can be observed in the many user groups that have sprung up on the Net and offline, where owners of products – from software to automobiles – exchange news, lore and opinions. Théberge (1997:69) observes that these user groups, which are a formation most familiar from computer culture, have also become characteristic of the world of electronic music instruments. Thus the transfer of technology from the computer industry to the electronic music industry parallels the transfer of certain cultural forms as well as business practices. It is important to note, that user groups are a crucial element by which manufacturers maintain a link with their customers. The "community" aspect is therefore closely linked to corporate strategy, as Théberge puts it: 'musicians' magazines, networks, and user groups foster a particular kind of group identity and a sense of "community," on the one hand, seemingly democratic and idealistic and, on the other, curiously bound to an identification with particular objects of consumption' (1997:90).

However, as Lunenfeld points out, the boundaries between production and consumption familiar from classical economy have become blurred as 'it is, then, no longer a case of sellers and buyers, but a relationship between hyphenates: between manufacture-producers and consumer-producers' (2001:5). This becomes evident when software tools, which themselves are market commodities under the auspices of intellectual property laws, are in turn used to produce new commodities. The

situation becomes even more complicated when the generation of content by users or beta testing in software development become crucial parts of business models and production pipelines. It is important to remember, however, that this new construct of the "prosumer" (a *portmanteau* of producer and consumer) is enveloped in its own mythology – that of participation. As Schaefer (2008) elaborates, participation is one of the master narratives deeply entangled with electronic communications. Bauman (2001:66) suggests that experience of the scale and intensity of socio-technical ecosystems reaffirms social values in a Durkheimian sense. However, Couldry's (2003) critique of Durkheim is that such experiences reinforce and legitimate media-related, rather than social values. In other words, while the use of massive Internet-based applications like so-called "social networking" sites may seem like participation in society itself; more than anything else, it involves the explicit and implicit participation in realising the business model on which the system is based. In this sense, the term "social media" seems to be an oxymoron, as they are social only inasmuch as media stand for society.

Chapter 3 has suggested that on of the main power struggles in contemporary technoculture is concerned with the issue of intellectual property. The question of property: first of land, then of the means of production is crucial to the class struggle and the hierarchical structure of society. As Wark argues, 'just as the development of land as a productive resource creates the historical advances for its abstraction in the form of capital, so too does the development of capital provide the historical advances for the further abstraction of information, in the form of "intellectual property"' (Wark 2004:18). However, the class of creators of intellectual property – the hackers – are not the beneficiaries of this abstraction, as they are subordinated to yet another class – the vectoralists. According to Wark:

> That the vectoralist class has replaced capital as the dominant exploiting class can be seen in the form that the leading corporations take. These firms divest themselves of their productive capacity, as it is no longer a source of power. They

> rely on a competing mass of capitalist contractors for the manufacture of their products. Their power lies in monopolising intellectual property – patents, copyrights and trademarks – and the means of reproducing their value – the vectors of communication.
>
> ***(Wark 2004:32)***

It is important to see Wark's (2004) *A Hacker Manifesto* as a story, a particular kind of narrative which is performative, as much as it is descriptive. However, as Robins & Webster emphasise, 'the hegemonic position of capital has depended on its ability to impose its values on the nature of change (and, at the same time to deny that alternative values could have any rational validity)' (1999:49). Whether it's capital or intellectual property, the vector seems to be the same – that of technological progress. It seems that 'technology has thus replaced music in the old bourgeois myth of the "universal language" (Théberge 1997:127-8).

CHAPTER 6.

CONCLUSIONS

It is no exaggeration to say that the process of refining a year's worth of knowledge-seeking and knowledge-making into a single textual artifact is a journey. The final chapter of this story has a two-fold task. On the one hand, it is concerned with the past because it must re-examine the coherence of the argumentation. On the other hand, it points toward the future. Not in a speculative way, as that should remain in the domain of futurism, but in a performative way.

Ethics, ontology and epistemology are all entangled. What this means is that:

> our own reflections on the state of our knowledge must necessarily include our ontological status in connection with technology and, in particular, the advanced technologies which make modern civilisation possible.
>
> ***(Shaw 2008:14).***

If there is a lesson to be learned from the analysis of ensembles of humans and non-humans, it is that a reconfiguration of ontology is required to encompass the variety of relationships denied within the humanist concept of the individual. The dichotomies of technology/culture, culture/nature and subject/object that have shaped the foundations of Western civilisation may be bursting at the seams, but their residue is still ubiquitous. The crucial step towards a more responsive/responsible ethics seems to be the acknowledgement that we have always been technological (Stiegler 1998), or as Bey puts it, 'there is no humanity without *techne* – but there is no *techne* worth more than my humanity' (1991:44-45). What this points to, and what this dissertation has hopefully demonstrated, is that a unified vector of inevitable technological progress is an illusion. However, as Desmond Morris puts it in *The Naked Ape*,

> We are constantly in a state of shifting balance between the conflicting attractions of the exciting new stimulus and the friendly old one. If we lost our neophilia, we would stagnate. If we lost our neophobia, we would rush headlong into disaster.
>
> ***(Morris 1994:94)***

It is certainly difficult to devise a perfect proportion of these two qualities, it seems though, that technoliteracy and a healthy dose of technoskepticism are essential for initiating a society-wide debate on the fundamental problems of our civilisation. The current over-abundance of cultural production is based on an abundance of material resources. If there is any inevitable event on the horizon it is most likely the gradual realisation that infinite growth is a pipe dream. It would be a shame if the debate on things that matter became foreclosed by a kind of neo-Thatcherite "There Is No Alternative." As the discussed technocultures demonstrate, the creation of alternatives is possible and necessary, however far their realisation may be from their potentiality.

The results of the search for community in contemporary technoculture are inconclusive, perhaps because there seems to be no one vision of what exactly community is. The ur-myth of paradise lost becomes re-iterated with each investigation and yet, as Bauman writes, 'community remains stubbornly missing, eludes our grasp or keeps falling apart, because the way in which this world prompts us to go about fulfilling our dreams of a secure life does not bring us closer to their fulfilment' (2001:144).

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APPENDIX

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