A Hyper-media & Project-based Approach to Music, Sound & Media Art

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Sound, Music & Media Art in the

Music, Technology and Innovation Research Centre Department of Technology

8th December 2015
Declaration of Authorship

I, Marinos G. Koutsomichalis, declare that this thesis titled, 'A Hyper-media & Project-based Approach to Music, Sound & Media Art' and the work presented in it are my own. I confirm that:

- This work was done wholly while in candidature for a research degree at the De Montfort University or at the University of York.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed: 

Date: 

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“a medium that privileges fragmentation, indeterminacy, and heterogeneity and that emphasizes process or performance rather than the finished art object will be seen by many as no bad thing”

[Mitchell, 1994, p. 8]
This thesis describes my artistic practice as essentially project-based, site-responsive and hypermediating. Hypermediacy—i.e. the tendency of certain media or objects to keep their various constituents separate from their structure—is to be understood as opaque, juxtaposed and after a recurring contiguity with different kinds of interfaces. Accordingly, and within the context of the various projects that constitute this thesis, it is demonstrated how, in response to the particular places I work and to the various people I collaborate with, different kinds of materials and methodologies are incorporated in broader hybrids that are mediated (interfaced) in miscellaneous ways to this way result in original works of art. Materials and methodologies are shown to be intertwined and interdependent with each other as well as with the different ways in which they are interfaced, which accounts for an explicitly project-based, rather than artwork-based, approach which, on its turn, de-emphasises the finished artefact in favour of process, performance, research and exploration. Projects are, then, shown to be explicitly site- or situation- responsive, as they are not implementations of pre-existent ideas, but rather emerge as my original response to the particular sites, materials, people and the various other constituents that are involved in their very production. Interfaces to such hybrids as well as their very material and methodological elements are also shown to be hyper-mediated. It is finally argued that such an approach essentially accelerates multi-perspectivalism in that a project may spawn a number of diverse, typically medium-specific and/or site-specific, artworks that all exemplify different qualities which are congenital to the particular nature of each project.
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Dedicated to the memory of Grigoris Voulgaris, which has always urged me to move one step beyond
Chapter 1

Introduction

1.1 Background

Before I elaborate upon the specifics of my research project, I will attempt a brief sketch of 20th/21st century art with occasional references to philosophy and media studies. It has to be noted, however, that this particular reading of mine is neither the sole possible, nor the most accurate. The history of art can be written in all sorts of disparate ways, depending on the particular narratives one wishes to zero in, and on the particular propositions one wishes to strengthen. My sketching herein is, indeed, oversimplified, fragmentary, and highly biased and, as such, it is not meant as a “proper” history of 20th/21st century art; accounting for the latter would be far beyond the scope of this thesis. It follows that certain parts of my subsequent analysis may be debated, or even frowned upon, by many; I nevertheless follow this particular route for the sake of better introducing my own research project, and in order to subsequently make my research questions, as well as the proposed methodological schemata, as explicit as possible.

In general, I will be explicit with my various arguments, criticisms and observations throughout this thesis, even if I may be in doubt about their exactitude/veracity, both for the sake of clarity, and in order to make it easier for future researchers to dispute or to build upon them.

Early 20th century art has been partly dominated by Greenbergian modernism (the preeminent discourses being abstraction and a socially-relevant functional interconnectedness with architecture and design), and partly by the transgressive/deconstructive aesthetics of Marcel Duchamp, Dada and Surrealism [Coulter-Smith, 2009, ch. 1, p. 1]. According to Peter Bürger, the latter laid their novelty in questioning the notion of the work of art as something precious, valuable or eternal, and in criticising the bourgeois institution of art at all levels [Bürger, 1984]. It was this particular tendency
towards deconstruction that hitherto inaugurated, promulgated and finally standard-
ised throughout the entire 20th century an ever augmenting interest in de-materialising
and de-aestheticising art in favour of its conceptual reverberations. Post-minimalism (as
expressed by artists such as e.g. Richard Serra, Eva Hesse, Sol LeWitt) has been a sig-
nificant step towards that direction, been characterised by both content and contextual
overtones which minimalism eschewed [Pincus-Witten, 1977]. Then, Fluxus, Happen-
ings and Performance Art (e.g. Joseph Beuys, Claes Oldenburg, Robert Rauschenberg,
Wolf Vostell, George Maciunas, Allan Kaprow, Vito Acconci) further dematerialised
the art-object in favour of situation-specific events or actions, intending an explicitly
conceptual type of art which, more often than not, constituted a critique to artistic,
social or political affairs [Hendricks, 2003, Lippard, 1973]. The dematerialisation and
the de-aesthetisation of the art-object has been brought to its extremes in the purely
Conceptual Art movement represented by artists such as Joseph Kosuth, John Baldes-
sari, Douglas Huebler, Hans Haacke, or the Art and Language group, who praised pure
ideas and concepts over matter or experience [Godfrey, 1998]. The following quote from
Lawerence Weiner is quite iconic of the dematerialisation achieved by conceptualists:

People, buying my stuff, can take it wherever they go and can rebuild it
if they choose. If they keep it in their heads, that’s fine too. They don’t have
to buy it to have it—they can just have it by knowing it [cited in Meyer,
1972, p. 217].

Either implicitly or explicitly, Conceptual Art evangelised a new kind of art which would
provide aesthetic rewards in its being intellectually contemplated rather than in its being
experienced or witnessed. Such a ‘conceptual turn’ has profoundly marked the art-world
ever since. Works of art are still supposed to somehow trigger cognition—either involving
some kind of intellectual statement, or articulating some kind of critique; this is also
explicit in the work of some prominent contemporary artists such as Damien Hirst,
Sherrie Levine, or Maurizio Cattelan.

According to Seth Kim Cohen, music missed this conceptual turn (which he considers
the most important contribution of the previous century in art); thence, he claims that
a new kind of explicitly ‘non-cochlear’ sound art (paraphrasing Duchamp’s ‘non-retinal
art’) is a historical necessity [Kim-Cohen, 2009]. I do not agree with Seth Kim Cohen in
that music lost this conceptual turn; I think it did make a bold way into the music world
via one of the most influential composers of the previous century, namely John Cage,
and his successors. Cage inaugurated and further standardised a largely conceptual
approach to musical composition, favouring procedures, chance, audience participation,
and happenings, and intending an explicit critique on the establish norms of composition
of the time. While Cage’s heritage has been the subject of numerous debates, and while his practices can be, indeed, interpreted in a number of disparate ways, I tend to understand Cage—an æsthetics as prioritising ideas and concepts, rather than execution and performance. To a certain extent, this is also seconded in Nyman’s ‘Experimental Music: Cage and Beyond’, where a persistent conceptualism in the practices of Cage and of his successors/followers (e.g. Cornelius Cardew, George Brecht, Christian Wolff, Dick Higgins) is implicitly accounted for [Nyman, 1999]. In this vein, and from a strictly poetical point of view, one could argue that in a large body of Cage’s works

all of the planning and decisions are made beforehand and the execution is a perfunctory affair. The idea becomes a machine that makes the art.

These are the exact same words Sol Lewitt has used in order to describe conceptual art [LeWitt, 1967]. Of course, not all of 20th/21st century artistic production can be understood as been solely, or primarily, conceptually-driven. There are important cases of artists, and of entire artistic movements, that to a greater or lesser extent eschewed conceptualism altogether, rather prioritising material and/or experiential traits—see also [Barrett and Bolt, 2013] and [Kim-Cohen, 2013]. For example, early 20th century Russian Constructivists understood the art object as the result of laboratory experimentation with the materials it consisted of [Gough, 2005, pp. 61–100] and coined the notion of ‘Factura’ to refer to the manufacturing of an object in a way that it does exhibit and that it does highlight its most important material overtones [Lodder, 1983]. Such an approach does echo contemporary concerns, if parallelised, for instance, with the practice of Humberto & Fernando Campana, whose design and installation works intend to exemplify certain properties of the materials they consist of [Campana et al., 2010], or with the theories of Marc Battier who proposed the use of ‘Factura’ as a means to analyse electronic music and audio art with respect to technology, technique and musical style [Battier, 2003].

There many more cases of artistic movements that have been largely material-driven, such as early Minimalism (e.g. Frank Stella, Tony Smith, Barnett Newman, Donald Judd) which, in my understanding, boldly exposes the simplicity and, dare I say, the “rawness” of the materials in use (abstract geometrical shapes, fundamental volumes, straight lines, monochrome surfaces, etcetera). Then, during the 1970s, the so-called Material/Structural film-makers (e.g. Holis Frampton, Malcom LeGrice) explored the medium of film itself, breaking it down in its bare components and creating works which Peter Gidal described as ‘records of their own making’ [Gidal, 1976]. Similar have been the concerns of the broader Sound Poetry movement in its various contingencies, where we encounter an explicit focus on the phonetic aspects of speech and

\(^1\)Kim-Cohen does acknowledge a material turn despite of his critical stance against it.
on abstract human vocalisations, rather than on semantics [Perloff and Dworkin, 2009].

Even Pop-Art can be partly understood in materialistic terms, since it did embrace and did explore popular culture in the most straightforward way and without necessarily intending some kind of critique—after all Andy Warhol famously claimed that he painted Campbell soup cans and Coca-Cola bottles because he simply liked them [Schroeder, 1992]. Material-driven traits are not at all unknown in the world of the various electronic musics and sound-art. Consider, for instance, those cases of works that focus on exposing/re-inventing the mechanics of sound generation: e.g. Alvin Lucier’s Music for a long-thin wire, I am sitting in a room or Still and Moving Lines of Silence in Families of Hyperbolas, Yasunao Tone’s Solo for Wounded CD, Anagram for Strings or mp3 deviation or Bernhard Parmegiani’s seminal De Natura Sonorum (which revolves around the contingencies of various sound-generating systems). Consider also the music of e.g. Mark Fell, Roc Jimenez de Cisneros or Florian Hecker; these artists explore the sonic potential of various generative systems, of algorithms and of mathematical functions, this way prioritising processes over concepts.

According to Claire Bishop, the material concerns of early minimalism coincided with the introduction of Merleau-Ponty-ean phenomenology—see [Merleau-Ponty, 1964, 2013]—to the English-speaking world, which eventually led to its standardisation as a tool to theorise the new aesthetic experience of 1960-70s minimal art [Bishop, 2005, pp. 3-5]. Eventually, Installation Art emerged, marking a paradigmatic shift towards the aesthetisation of the work of art. A great concern for a series of artists has been, indeed, to present (rather than to re-present) physical space, light, sound and other materials, as well as to deal with audiences as literal presences in space—as humans that are supposed to actually “experience” a work of art, rather than to reflect upon it [Bishop, 2005, pp. 3-5]. Consider, for example, Bruce Nauman’s Acoustic Wall, Robert Irwin’s Fractured Light—Partial Scrim—Eye Level, the immersive light installations of James Turrell, Olafur Eliason’s The Weather Project or his recent Riverbed, Martin Creed’s No. 227: the lights going on and off, and Anthony McCall’s abstract light sculptures. These works have been created by artists of very diverse backgrounds, over a period of four decades, and employing a variety of different materials/media; yet, they all zero in the mere physicality of unmediated first person embodiment, and all, to a greater or lesser extent, explore the ways in which the materials their work revolves around affect human bodies and/or consciousness. This last point is even more explicit in works such as Höller’s Lichtwand, which comprises an intensely bright barrage of flashing lights at a frequency capable of inducing visual hallucinations in the viewer, or such as Turrell’s Light and Space exhibition in the Whitney Museum (1980), where a woman ‘became disoriented and confused and was violently precipitated to the floor’ [Glueck, 1982].
Chapter 1. Introduction

The sonic medium holds a special place in phenomenologically-driven art, given its synergetic relationship with physical space and architecture, and given its ability to physically vibrate bodies and to affect low-level perception [Blesser and Salter, 2007, Bregman, 1990, Goodman, 2010, Pallasmaa, 2013, Thompson and Biddle, 2013]. The various interdependencies and cross-actualisations between sound, space, matter, perception and architecture have been a bold interest for several generations of sound artists. Consider, for example, Jacob Kirkegaard’s Labyrinthitis, LaMonte Young’s Dream House, Iannis Xenakis’ Persepolis and La Legende d’Eer, the live performances of artists such as Phil Niblock, Zbigniew Karkowski, Masami Akita or Toshimaru Nakamura, or the installation work of Maryanne Amacher, and of Bernhard Leitner. Eventually, Sound Art has been standardised as a dedicated discipline. These days there is an abundance of books that attempt to provide its historical, contextual and theoretical genealogy—e.g. [Kahn, 1999, LaBelle, 2006, Licht, 2007], to name a few. Of course, opinions differ on what exactly are the differences between Sound Art and certain kinds of Electronic Music, if any. As Demmers points out, even if the two terms are not interchangeable many practitioners understand them as similar or even synonymous [Demmers, 2010, p. 8]. On such an account, it is important to highlight that the affinity certain music practices seem to have with certain kinds of Sound Art largely lies on their distinctness from what has been understood as music in the West for centuries. At least as far as the Occidental classical tradition is concerned, music has been typically established upon abstract narratives, metaphors and intra-musical signification [Goodman, 1976], while in certain kinds of electronic-music and sound-art, sound is to be primarily understood as an end in itself and not as a building block to extraneously defined content.

The onset of what turned out to be a long-lasting unconditional exploration of the material, physical and phenomenological properties of sound has probably been the tape experiments of Pierre Schaeffer, as well as his theoretical writings. Schaeffer, to some extent influenced by his understanding of Husserl-ean phenomenology and of Saussure’s linguistics theory, suggested a ‘reduced’ mode of listening which, when backed up by an appropriate exposition of the sonic material, would enable an audience to experience sound per se, stripped of all extrinsic references and connotations. This way he inaugurated the ‘acousmatic’ tradition. And while I tend to understand sound as ostensibly intertwined with our perceptional apparatus and, therefore, congenitally referential to a certain extent—a view also advanced by later phenomenology, e.g. [Merleau-Ponty, 2013]—I have to praise Schaeffer in that he paradigmatically shifted the focus to an explicit exploration of sound and listening. His In Search of a Concrete Music [Schaeffer, 2012] is a significant document of the very first conscious attempts to produce and to theoretically systemise a new kind of music that is founded exclusively on the experience of sound.
At about the same time and for several decades to follow, a number of composers associated with the Western classical tradition pushed the limits of music by means of exploring the materiality of their instruments via ‘extended techniques’, as well as employing various technological means. It has to be highlighted that at least since the middle ages, music had been always associated with particular and easily identifiable kind of timbres, given that composers/musicians would select from a limited and very specific range of instruments [Demmers, 2010, p. 22]. It was not but until the 20th century that a number of pioneering artists committed themselves to exploring new kinds of sounds, textures and timbres. Such examples would be Karlheinz Stockhausen, Luciano Berio, Gerald Grisey, Tristan Murail, Kaija Saariaho, Fausto Romitelli and Per Nørgård, to name a few. In most cases, the new kinds of sounds acquired would be used within the context of broader abstract compositional systems such as Serialism or Spectralism or, as in the case of Luigi Nono, within a political/ethical context [Emmerson, 2013, pp. 10–11 & p. 110]. There are, however, exceptions to this rule, such as for example the work of several Romanian Spectralists such as Iancu Dumitrescu or Horatio Radulescu, who attempted to structure music according to the actual phenomenology of sound in a performance environment [Reigle, 2008], or works such as Helmut Lachenmann’s Serynade, where the composer interrogates a piano in both acoustic and symbolic terms [Wilson, 2013].

Contemporary compositional strands that revolve around acoustic instruments and technology, for their greatest part, fell into either of two categories. The first category relates to the spectral/post-spectral schools of thought (see e.g. [Anderson, 2000]) that marked the latter half of the 20th century’s classical music production as well as with certain strands in electracoustic/acousmatic music. In both these cases the temporal dimension of sound is highlighted and music is conceptualised as ‘sound evolving in time’ [Fineberg, 2000, p. 2] (referring to spectral music) or as a sonic-spectrum manifesting in time [Smalley, 1997] (referring to electracoustic music). The second category would, then, refer to a broader movement towards foregrounding music expression either employing new instruments or by means of augmenting/extending the capabilities of existent ones. Such a tendency is exemplified in the work of artists such as Atau Tanaka or Marco Donnarumma as well as in the theoretical discourses that have taken place in the context of the various international NIME (New Interfaces for Musical Expression) conferences (that occur annually since 2001) [Poupyrev et al., 2001]. Nevertheless, there have been certain practices within a NIME context that seem to transcend ordinary understandings of “musical expression”. Consider, for instance, Bowers’ and Archer’s concept of infra-instruments, i.e. instruments of restricted interactive potential which rather “en-gender simple musics with scarce opportunity for conventional virtuosity” [Bowers and Archer, 2005], or Bowers’ and Villar’s concept of ad-hoc instruments, that is instruments constructed during the course of interacting with them [Bowers and Villar, 2006].
Following Pierre Schaeffer’s interest in recorded, rather than electronic sounds, and the popularisation of acoustic ecology by Murray Schafer [Schafer, 1993] in the 1970s, certain practitioners became more and more interested in environmental sound, to the extent that we can speak of a dedicated genre situated in-between sound-art, music composition, ecology, anthropology, and documentary. Consider, for instance, the largely compositional approach of Jana Winderen or of Francisco López (who explicitly positions himself within the broader Schaefferian tradition in [López, 2006]), the largely Cage-an æsthetics of Max Neuhaus’ Listen, the purely ecological approach of the World Soundscape Project, or Steven Feld’s ethnographic work. More, in cases such as Hildegard Westerkamp’s Kits Beach Soundwalk or Watson’s Alcedo Volcano and A Journey South, we see the recordists exposing their very presence in the soundscape, this way enacting narratives by means of interacting with their environment or with their equipment and also employing speech—in such cases it is the very act of recording and its specifics that are foregrounded, which accounts for a hypermedia approach, as to be later explained. Materialistic traits are explicit in cases such as Toshiya Tsunoda’s Extract From Field Recordings Archive series and O kokkos tis anoixis or Chris Watson’s Stepping into the Dark and Outside the circle of fire—all essentially being catalogues of environmental sounds with respect to some particular thematic axis.

It can be, therefore, suggested, that art of the last decades did oscillate between the two extremes of conceptualism and materialism, in various contexts, and within various genre-specific confines. Of course, the entire history of 20th/21st centuries cannot collapse in a dialectic opposition between those two ends; such an approach would be both naive and flawed. It would be more accurate to understand art, in general, as being primarily driven by the major technological, political and philosophical leaps of each era, as well as by the still echoing preexistent traditions, cultural practices and beliefs. In this vein, the various conceptualisms/materialisms of the past can be thought of as contingencies of broader integrals that interrelate, interdepend and co-produce each other. Accordingly, it has been argued that conceptual traits in art have been backed up by post-structuralism and by the rise of the feminist movement [Bird and Newman, 1999], and that Installation Art has been driven by phenomenology [Bishop, 2005, pp. 3-5]. It has been also suggested, that post-WWII art, in general, has been regulated by the art market and that, up to a certain extent, it has been driven by its own commodification [Groys, 2008, Penny, 1996, pp. 1–12]. Interestingly enough, the latest trends in both continental and analytic philosophy seem to advance an unconditional materialism; thus pushing art practices towards such a direction. In Francis Halsall’s words:

artistic practices might constitute a guerrilla metaphysics in that they
offer a way into thinking non-conceptually, beyond the correlation of consciousness and world [Halsall, 2014, pp. 393–394].

The so-called ‘speculative turn’ comprises the works of a wide range of philosophers and theorists who tend to denounce phenomenology and all flavours of what they refer to as ‘correlationism’ (the idea that we access the world through the correlate of thinking and being) in favour of some kind of ‘speculative realism’ or of some ‘object-oriented-philosophy’ [Bryant et al., 2011]. For example, Ray Brassier understands the world as not inherently thinkable and thought as not guaranteed to access it; in discordance with a Heideggerean stance he suggests that

the metaphysical investigation of being cannot be collapsed into a hermeneutical interpretation of the being of the investigator and the different ways in which the latter understand things to be [Brassier, 2011, p. 48]

Such trains of thought have already made their bold way into artistic milieus—e.g. consider that Graham Harman, one of the key figures in this speculative turn, has been invited to speak about Objects and the Arts in the prestigious Institute for Contemporary Arts in London2.

The previous century has been also profoundly marked by the technological breakthrough during and following the WWII, which eventually led to the computerisation of all first world societies. A new era of information emerged, which well affected most aspects of human life, art included. It is not at all uncommon nowadays to encounter software (e.g. Scott Draves, Jason Salavon), body modifications or cyborgs (e.g. Stelarc), transfusion of animal blood into humans (May the horse live in me by Art Orienté Objet) or bacteria (Joe Davis’ Baterial Radio) within an artistic context. All sorts of technologically-driven art genres, and of aesthetically-concerned technological fields, have this way emerged—e.g. Digital Art, Computer Graphics, Computer Animation, Virtual Art, Internet Art, Interactive Art, Video Games, Robotics, Biotechnology, and others; these are all broadly referred to as New Media Art [Rush, 2005, Tribe et al., 2009]. However, the approaches of new media artists are not to be always understood as essentially different from those of their predecessors’. As Domenico Quaranta points out, new kinds of media do not necessarily guarantee new kinds of art [Quaranta, 2013, pp. 26–27]—a claim also seconded by Stanley Cavell’s who, several decades earlier, pictured the modern artist as one who creates new media in their art rather than new instances of the latter [Cavell, 1979, pp. 103–105]. Nonetheless, New Media Art does seem to push art beyond the paradigm of otherwise contemporary art, even if several practitioners do

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2 the entire lecture may be found here (accessed on the September 5th 2014): https://www.youtube.com/watch?v=QJKQ9bf00g
carry influences from the latter with them. This is because the new media have been fundamentally different in both function and scope than their antecedents, this way advancing different paradigms and modes of thinking [Manovich, 2001]. Still, it would be naive to understand new kinds of media as being completely ‘new’—as agents that are extrinsic to prior cultural practices. It has been, instead, convincingly argued that new media tend to remediate existent ones and to present themselves as refashioned and improved versions of them [Bolter and Grusin, 2000]. That is to say that new kinds of media can be understood with respect to the media they re-appropriate or extend and, accordingly, that they emerge from within existent cultural context, even if they do suggest new thinking paradigms and new behavioural patterns. More importantly, it has been argued that the appearance of some new medium will cause the meaning and form of existent ones to be transfigured and shifted accordingly and even if the latter are not directly related with the former; this way cultures can be envisioned in terms of reflexive media ecosystems [Kittler, 1992].

Bolter and Grusin distinguish three traits in the genealogy of new media, namely: ‘immediacy’, i.e. a style of representation that implicitly or explicitly intends to hide the presence of the medium; ‘hypermediacy’, i.e. a style of representation that makes the medium evident and explicit; ‘remediation’, i.e. the formal logic by which media tend to refashion or remedy pre-existent media [Bolter and Grusin, 2000]. Bolter and Grusin argue that all media are soon discovered as not immersive/transparent—that is to say that all media will eventually fail to properly foreground their contents—this way exposing the parallax between what is mediated and media themselves. In my understanding, and given that technology itself claims more and more space in contemporary life, there is no longer any need for immersion/transparentcy. In our current culture, technology no longer undermines the authenticity of the experience and, since hypermediacy does provide an authentic experience on its own sake, immediacy is not to be idealised in any way—see also [Huhtamo, 1995]. In the same vein, Katherina Hayles has proposed that we have already entered a ‘post-human’ condition—one that does away with naturalistic idealism altogether and where humans are conceptualised as being co-produced with intelligent machines [Hayles, 2008]. Hypermediacy then emerges as a promising way to explore this new reality both in terms of new technologies and in terms of the paradigms they suggest, as well as with respect to the ways in which older media and practices are still echoed in contemporary society.

Manovich has been one of the first to theorise such a shift, even if he follows a rather outdated train of thought when he writes that:

If in traditional media the elements are ‘hardwired’ into a unique structure and no longer maintain their separate identity, in hypermedia the elements
and the structure are separate from each other. [...] In programming, there is clear separation between algorithms and data. An algorithm specifies the sequence of steps to be performed on any data, just as a hypermedia structure specifies a set of navigation paths (i.e. connections between the nodes) which potentially can be applied to any set of media objects. [Manovich, 2001, p. 60]

Understanding traditional media as ‘hardwired’ into some ‘unique structure’ is, in my opinion, a broad and defective oversimplification, which, as to be promptly discussed, is not compatible with a series of contemporary trains of thought. More, a data-contra-algorithms separation is neither explicit nor relevant in all programming contexts and does not necessarily reflect the way programmers think. In Object Oriented Programming—one of the most wide-spread programming paradigms these days—programs are rather represented in terms of complex ecosystems of potentially polymorphic objects that typically encapsulate both data and algorithms. In their classic ‘Design Patterns: Elements of Reusable Object-Oriented Software’, the so-called ‘Gang of Four’ describes recurring solutions to common problems in software design—solutions that typically involve complicated kinds of objects (comprised of both data and algorithms) structured in rather complex genealogies and in sophisticated networks of communication between one another [Gamma et al., 1994]. Note that this particular book has been highly influential and that it has sparked an entire pattern-oriented school of thought in programming. Even if it is perfectly valid, from a strictly technical point of view, to conceptualise programming as ‘algorithms operating on data’, and even if such a paradigm is still reflected in e.g. C++ STL library [Stroustrup, 2013, pp. 885–972], such a frame of mind has little to do with how code is actually written/maintained these days in certain contexts, and it does not account at all for a series of important thinking schemata that are common amongst programmers these days.

Manovich rightly understands new media as modulators of the way we think and behave in contemporary societies; he, nevertheless, overemphasises the importance of rather fabricated oppositions (e.g. data-vs-algorithms, interface-vs-content) throughout his seminal ‘Language of New Media’, this way echoing a rather outdated structuralist approach [Manovich, 2001]. This is not accidental, the era of information still echoes the dichotomies of the past. A cursory concept-contra-mater opposition not only survived the new media turn, but actually co-produced it, at least according to Hayles that considers the Shannon-Wiener’s definition of information as the onset of a systematic de-evaluation of materiality and embodiment [Hayles, 2008]. On the other hand, according to Hansen the processes by which data can be made perceivable are always embedded in the digital
media containing the former and, thence, the latter are only constituted with respect to some embodied subject [Hansen, 2004]. Ikoniadou, then, asks:

Is there a middle way out of the dichotomy between phenomenological anthropocentric embodiment and the cybernetic prioritizing of disembodied information? [Ikoniadou, 2014, p. 34]

From my point of view, however actual the tension between such oppositions may be, the real question is not how to bridge this gap, but, instead, how to avoid staring at it—the more one tries to harmonise such oppositions, they more they will expand, since they largely lie in the eye of the beholder. At the end of the day, contemporary schools of thought tend to denounce or eschew such dichotomies altogether. Since the early 1970s, Deleuze and Guattari have conceptualised the world in terms of ‘intensities’, ‘virtualities’, ‘difference’, and ‘individuation’ [Deleuze and Patton, 2004]. Bruno Latour has, then, suggested that all media/objects are to be understood as parts of broader and dynamic social networks, and he has attempted to prove the fallacy of the object-subject and nature-society oppositions [Latour, 2007, 2012, Wheeler, 2010]. Tim Ingold views all ‘things’—and, following, their content—as always corresponding to the broader contexts suggested by the methodology of their own making [Ingold, 2013]. Lambros Malafouris soundly proposes that the mind is embodied, extended, and distributed, and pictures ‘things’ as cognitive extensions of the human body [Malafouris, 2013]. Minsky has argued that cognition can be modelled as a complex ecosystem of discrete, semi-autonomous agents which collide and clash in various ways, causing consciousness to arise as an epiphenomenon [Minsky, 1988]. According to the theory of ‘autopoiesis’, self-consciousness arises from recursive ‘autopoietic’ processes, so that our understanding of the world is primarily governed by the latter [Maturana and Varela, 1980]. Varela has later suggested that it is in their active engagement with an environment that such autopoietic processes are further forged and developed; he eventually proposed that there is no unified “self”—mind is to be understood as a rather dis-unified, heterogeneous collection of processes [Varela, 1991].

While to explore the parallax between consciousness, agency, mediation, and the world appears to be an ongoing concern for theorists and scholars belonging to disparate disciplines, media artists have expanded their expertise in areas that would hitherto only concern scientists or engineers—to boot, they often engage in trans-disciplinary and/or collaborative contexts. Given that such an expertise is typically escorted with some background in social sciences and philosophy, as well as with encounters with disparate kinds of audiences in all parts of the world, media art practitioners explore technology and culture in ways that often transcend theories and classifications. In such
a vein, it is an ongoing concern for artists to interrogate how new (and existent) kinds of media manifest into perceptual, physical and emotional space, how they reshape society and how they may eventually redefine the purpose and functionality of art per se in a more rudimentary level. In my understanding, this calls for new methodological traits that encourage hypermediacy, so that artists may explore the ways in which new kinds of technology mediate materials, the ways in which they are themselves mediated and the ways in which they re-mediate pre-existent cultural practices, this way accounting for what ‘experience’ may stand for in a technologically-mediated culture.

1.2 Methodology and Research Questions

Under these premises, the overall focus of my research is to be understood as my personal way to hypermediacy—as my exploration of how material, procedural and performative traits may be interchangeable within a broader artistic practice, and of how various kinds of media, of materials and of methodologies may shift such a practice in new directions. In such a context, artistic practice becomes material-driven and media-driven rather than narrative-driven.

In particular, my work attempts to address the following questions:

1. How may hypermediacy be promoted in the various stages involved in creating and presenting art?

2. In what ways may the various material and methodological constituents as well as the various media involved in the production of an artwork be juxtaposed, interrogated and eventually foregrounded?

3. How may a project-based and site-responsive approach to art-making be established and how it may evolve with respect to the introduction of new kinds of media, materials and/or methodologies?

4. In what ways an artistic project or an overall artistic practice may be synchronously or a-synchronously projected across a wide range of media?

In my portfolio of works, one encounters a wide range of interchangeable means, in terms of media, materials and methodologies, which as to be demonstrated in the subsequent chapters, accounts for hypermediacy across the various stages of artistic production, presentation and distribution. It is in this context that I have gradually developed an explicitly project-based and material/situation responsive approach to creating art. Contrasting other kinds of practices where one starts with some kind of concept, idea
or formula and subsequently seeks the means/resources to realise it, I rather focus on
what is available and I make art with respect to how the latter may be explored and/or
mediated. In such a vein, and from a poetical point of view, a ‘project’ is given flesh
as a response to my engagement with a broader production hybrid, in terms of site,
technological/technical resources, humans encountered, socio-cultural background, ar-
chitecture, materials, as well as with respect to my own aesthetic inclinations as they are
transfigured over the course of my practice. Projects typically commence as a response
to some kind of artwork commission, artistic residency, or out of the production specifics/limitations that I have somehow established myself, so that they are delineated by
broader production contexts and by the explicit or implicit restrictions that the latter
impose (e.g. when I am commissioned a particular kind of work, or when I have com-
mited myself to a particular methodology, or when I have to adhere to the particular
ways real-life art systems operate). I typically proceed with those specifics, exploring
them and attempting to expose congenital qualities, in order to come up with interesting ideas on how they may be subsequently crystallised into concrete artwork(s). Such
an approach prerequisites that I persistently modulate my tactics, exploring different
kinds of materials, methodological traits and interfaces, so that I do not end up with
merely different incarnations of the very same principles, and so that I may explore the
way the very same means behave in different contexts. In that vein, the projects to be
discussed hereinafter have been explicitly produced and publicly presented in a contextu-
tually, culturally and geographically dispersed manner. This is the only way that an
ever-renovating palette of materials, methodologies and interfaces may be guaranteed.
As to be shown in detail in chapter 2 on page 18, I have developed and presented my
projects in different cities and in all sorts of contexts, ranging from formal institutions
to churches and from underground venues to museums. On this respect and up to a
certain extent, my practice has important anthropological/ethnographic overtones.

As far as my practice is concerned, projects are to be understood as synergetic hybrids of
materials and methodologies which are typically mediated (interfaced) in various ways
and with respect to different kinds of media; this way a projects often resolve into
several artworks. Hence, the distinction between a ‘project’ and an ‘artwork’ is explicit:
A project refers to the broader production hybrid and to whatever principles govern it, as
well as to all of its contingencies as it is refashioned with respect to the various interfaces
applied to it and to the specifics of the various exhibition opportunities. Artworks are
merely the outcomes of such acts of mediation—perspective looks to the broader hybrid
which essentially cast it accessible to experience. It has to be made explicit that no
idealism is implied herein: there is nothing ‘ideal’, ‘perfect’ or ‘immutable’ in a project;
artworks are not meant as exemplifications of any fundamental characteristics of the
latter, nor should projects be understood as some kind of template for artworks. On
the contrary, projects and their outcomes are always in an mutually productive and synergetic relationship. Projects are supposed to be refashioned and re-appropriated with respect to the various interfaces applied to them, which accounts for a hypermedia, rather than for a Platonic, approach. Instead, projects are typically subjected to all sorts of modifications, remediations and transmediations (i.e. the process of translating a work into a different medium) on the account of future exhibition/presentation opportunities. Thus, projects may be said to be open-ended and contingent.

An alternative way to conceptualise this scheme is as if projects pose certain questions about their constituents, to which all actualised artworks are valid, albeit not exclusive nor universal, answers. This suggests that my approach also has epistemological reverberations, as all actualised artworks do offer a perspective insight to the integrals around which a project revolves. With each actualisation of an artwork I gain more knowledge regarding the particular material and methodological strata involved—albeit not necessarily of a scientific/theoretical kind. On such an account, my practice correlates with the idea that knowledge and doing are essentially intertwined and to some extent inseparable. This idea has been proclaimed by Dewey [Dewey, 2004], but is also central in contemporary theories of Situated Cognition, according to which knowledge is situated in activity bound to social, cultural and physical contexts [Greeno, 2005]. On this respect, and from an epistemological point of view, my methodology adheres to a different kind of rationalism than what traditional scientific method suggests: I do not seek to pose or answer questions in theoretical/discursive terms, but, instead, to embody them into projects and to, subsequently, address them by means of actual artworks. Feyerabend—whose work has been often mistaken as a call for ‘epistemological anarchism’—has demonstrated that the universal scientific standards are far from accurate and precise irrespective of context; instead he observes that scientists often create the phenomena they are supposed to study [Feyerabend, 1993, 1996]. He further argues that any single-perspective scientific method is essentially restricted and that there can be several other rationalities that can also lead scientific progress. It is herein proposed that artistic practices, in general, and my particular approach, in particular, may, indeed, constitute alternative rationalities which are, nevertheless, epistemologically valid. This is seconded by Marcel Cobussen according to who:

> The art work is not a practical aid which rushes in to help the discursively presented conclusions; it is itself the statement and the conclusion [Cobussen, 2007].

In such a vein, the particular rationality that my research methodology suggests is largely inspired by ‘research-through-design’ methodologies—see e.g. [Wallace et al., 2013, Zimmerman et al., 2011]. According to Frayling, research-through-design concerns
research where the end product is an artefact—where the thinking is, so to speak, embodied in the artefact, where the goal is not primarily communicable knowledge in the sense of verbal communication, but in the sense of visual or iconic or imagistic communication [Frayling, 1993, p. 5].

Apparently in the case of my practice “visual or iconic or imagistic communication” has to be extended to account for more complex aesthetic experiences, which are nevertheless non discursive/theoretical in their nature. Under these premises, and also drawing on situated cognition, as well as on Malafouris’ understanding of the mind as embodied, extended, and distributed, my practice builds its own self-sufficient rationality. It is within the confines of the latter that I attempt to answer the questions posed above. That said, it has to be noted that any rationality comes with its own limitations and, accordingly, that there are important restrictions posed by the rationality enacted by my methodological schema. Artworks often fail to properly account for certain aspects of their making and for the broader hybrids that sparked them. Then, in the majority of cases artworks have a limited scope bound to the specifics of some particular space and some particular performance/exhibition event. Documentations of artworks cannot account for the actual experience of the original artwork nor for the anthropological overtones of their production; this is particularly veracious in a performance or installation context where, by definition, audiences are addressed as literal presences in space, as well as in the context of collaborative/D.I.W.O. projects. Given that my approach is project-based, rather than artwork-based, these are important limitations. As to be promptly discussed, this thesis is structured as an extended ‘annotated portfolio’ so that these limitations are eventually smoothed out and, hopefully, resolved.

1.3 Structure of the Thesis

The structure of this thesis is largely inspired by the concept of an ‘annotated portfolio’, as theorised by John Bowers; in his words:

The concept of an annotated portfolio was offered as a way of organising what can be learned from design in terms of annotations which formulate and highlight features of interest in a portfolio, while reciprocally gaining their sense and significance from their connection to the artefacts themselves

[Bowers, 2012]

According to Bowers, artefacts can be theoretically illustrated by means of annotations, so that a collection of works is built into a portfolio that can actually offer solid answers

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3Do It With Others
to concrete questions. It is, this way, possible to juxtapose/compare practice-based approaches with relevant research of a more theoretical nature. He underscores that this does not necessarily imply homogeneity or similarity between the various artefacts—as a matter of fact it is perfectly acceptable for the latter to differ in all sorts of respects. In my understanding, to annotate a portfolio is not to so much to account for whatever similarities or differences between artefacts, but to rather orientate the reader towards those aspects of the various works that relate with the original questions, and to, this way, foreground various implicit narratives enacted between the former.

Drawing upon Bower’s paradigm, I have decided that an extended kind of annotated portfolio would be the optimal structure for my thesis: extended in the sense that it does not merely comprise annotations, but also more elaborated sections where I scrutinise certain aspects of my work in a more substantial way. This thesis, then, comprises six chapters, including the present, as well as a USB memory stick containing audio and video documentations, code excerpts, and images. The memory stick delineates a rather sizeable portfolio of artworks which is necessary, nevertheless, so that all the different kinds of media, materials and methodologies I have hitherto dealt with are properly accounted for. While in the following chapters some projects are discussed more often and in more detail than others, they all exemplify important contingencies of my practice and, as such, none of these projects could be left out. (As a matter of fact I have left out a few other projects which would not contribute anything substantial to this thesis.)

In this first chapter I discuss the background of my research, its scope, my particular methodological tactics and the overall structure of the thesis; I also enumerate the questions around which the latter revolves. The next chapter consists of brief descriptions of all projects to be discussed hereinafter. Descriptions are largely of logistical and of technical nature, even if I occasionally sketch aesthetic and anthropological affairs. In the following three chapters, I elaborate on the various materials, methodologies and interfaces encountered in my work, respectively, each time highlighting (dis)similarities both in the ways they are incorporated in the various projects and in the ways they refashion the latter. Throughout these three chapters, I examine the way I have dealt with various media in various contexts and with references to critical theory, philosophy and actual artistic practice; this way I intend to demonstrate how my practice, which can be also thought of in all sorts of other ways, relates to my research questions. It has to be emphasised that such an explicit distinction between materials, methodologies and interfaces is neither to be taken literally nor to be understood as intrinsic to the way I work. As already briefly discussed and as to be further demonstrated, my practice is reflexive, distributed, recursive and rhizomatic; it revolves around hybrids—i.e. around complex, dynamic and heterogeneous multiplicities—rather than around hyphenations of distinct elements. I follow such a tripartite schema for reasons of structural clarity.
and not because it reflects the way I work. Eventually, in the last chapter, I conclude my findings, revisit my research questions, point out to possible directions for future research, and, eventually, attempt some brave propositions.

It follows that the written part of this thesis is neither self-sufficient, nor subsidiary—its role is not to merely contextualise my practice, but, more importantly, to formulate it into a systematic body of work which may offer solid answers to very precise questions. Notwithstanding, it has to be noted that there are important overtones to my practice which are only implicitly, if at all, addressed in this thesis—e.g. questions regarding audience participation, or the anthropological/ethnographical aspects of my practice. It has to be made explicit that this thesis zeros in a particular set of questions and through the very specific methodological traits elaborated upon above—it does not intend to account for my artistic practice in its entirety. There are certain aspects of my work that are simply the subject of different research projects and, as such, they are not addressed herein.
Chapter 2

Pragmatics

2.1 Introduction

This section consists of a delineation of the projects discussed hereinafter. In each case, I overview logistical and technical aspects, account for actual artistic outputs, and explain what kind of documents/media are included in the memory stick.

2.2 In:Out

In:Out has been my first major project as a Ph.D. student. It has been conceived and realised as a performative installation piece during the fall of 2010 in the Arthur Sykes Rymer Auditorium in the Music Research Centre (York, UK) and in response to its particular sound reproduction system. The latter consists of a full-sphere configuration of 16 near-field monitor speakers as well as of a partly moveable 5.1 PA. The presence of these two distinct sound reproduction systems, each of which with different qualities and scope, sparked the conception of a project which would revolve around two concurrent, yet contextually and acoustically different, sonic planes. A second—studio only—version has been realised in January of 2011 in the Studio for Music Interaction and Polyphony in the faculty of Music Technology and Acoustics of the Technical University of Crete (Rehtymnon, Greece), where I was working as a lecturer at that time. For this version I used a different combination of speakers, 14 in total, plus two subwoofers. The sonic material used in the project comprises b-format environmental audio recordings and monophonic recordings of a Doepfer modular synthesis system (both of which having been realised at previous times and for other reasons at the campus of the University of York and at the Studio of Music Interaction and Polyphony, respectively), as well as abstract synthetic sounds generated with the SuperCollider programming environment.
This material is to be diffused in space using a computer equipped with custom software realized in SuperCollider as well as an external hardware controller. The original audio files and the code used in this second incarnation of the project are included in the /1. In-Out/Performance) folder in the usb memory stick; note, however, that this code is not compatible with recent SuperCollider distributions and that it also depends on particular hardware.

No public performance of In:Out ever occurred, with the sole exception of a private event for a small audience of friends in the A.S. Rymer Auditorium in 2010. Yet, several rehearsals and recording sessions took place both there, and at the Studio of Music Interaction and Polyphony. A four-channel rendering of one of these recordings has been publicly released as a digital download by the Madrid-based label ReductiveMusic\textsuperscript{1}. A typical duration for a performance would last between 30 minutes and an hour. The memory stick also contains a four-channel, 43’35” long, audio recording (24bit/96Khz non-interleaved audio) in the corresponding folder.

### 2.3 Passeggio Sonoro

Passeggio Sonoro has been conceived as a multi-channel audio performance for the occasion of the 5th FKL’s conference on SoundScapes in Florence (where it was also premiered). It has been composed over a period of several weeks in the Studio of Music Interaction and Polyphony in the faculty of Music Technology and Acoustics of the Technical University of Crete the first months of 2011. The work has been premiered on the aforementioned conference and has been also performed on the WFAE’s (World Forum for Acoustic Ecology) international conference in Corfu later on the same year. Passeggio Sonoro—i.e. soundwalk, in Italian—has been conceived with respect to the theme of the 5th FKL conference. The work aspires to emulate the experience of moving through different acoustic spaces, albeit not in merely descriptive terms. Instead, it pinpoints the various psychological and auditory perception related phenomena that are likely to occur during an actual soundwalk (e.g. masking, casual versus non-casual listening, attentional shifts, etc) and under the certain circumstances that are to be recreated in each performance.

For a performance I typically select environmental recordings from a relevant database and I juxtapose them in-situ according to a certain loosely-modelled narrative that has emerged out of my engagement with them. The material used derives from my field-recordings archive and has been recorded in various urban, rural, and wild-life environments. In order to reproduce and to localise those recordings I use a sophisticated

\textsuperscript{1}http://www.reductivemusic.com (accessed September 5, 2014).
audio player—i.e. AmbiDeck, which can be found in the /additional_code folder in the usb memory stick—that I have coded with the SuperCollider programming environment. AmbiDeck is capable of playing back mono, stereo and b-format audio files, of selectively filtering/equalising them and of applying the necessary ambisonics encoders/decoders so that the output may be reproduced by configurations featuring an arbitrary number of speakers; more, it enables various modes of interaction, such as e.g. via an external controller, a dedicated GUI or through live-coding. Live performances of the work require multi-channel loudspeaker configurations of at least eight speakers so that a truly immersive environment may be established. A typical duration for a performance would be between 20 and 45 minutes. The usb memory stick also contains a four-channel, 28’00’’ long, studio version (24bit/96Khz non-interleaved audio) in the corresponding folder (/2. Passeggio Sonoro/). The Performance subfolder contains the necessary material to actually perform Passeggio Sonoro, namely a folder with the environmental recordings and the actual code used (which prerequisites AmbiDeck). Note that the latter is annotated with various (occasionally cryptic) comments that I rely upon when performing the work.

### 2.4 Sygxysis

Sygxysis was developed over a period of few weeks the summer of 2011 in my then main place of residence in Heraklion. Using SuperCollider I implemented a number of custom waveform generators that were all based on highly complex stochastic oscillators that would recursively modulate themselves—these oscillators can be found in the project’s folder (/3. Sygxysis/) in the usb memory stick. The project commenced as an unconditional exploration of those generators to end up, apropos of their qualities, as a series of audiovisual performances (audio and waveform projection) that were intended to attack the audience with intense spectra and to, this way, enact situations of discomfort and psychological unrest. Hence the project’s name: a misspelling of the Greek word Σύγχυσις, which in English would be expressed as a disturbance of psychological or mental health, psychological unrest or unrestful vexation. Sygxysis primarily resulted in a number of audiovisual performances, intending to present the stochastic functions that the project explores in at least three different sensory modalities (as to be further discussed in section 3.3 on page 38). Performances are structured as live-coding sessions in SuperCollider and typically last around 15–20 minutes, given their intensity. Sygxysis has been publicly performed live several times hitherto. The work has been premiered in the underground venue Noise=Noise in London (2011), and has been subsequent performed at a wide range of places including formal concert halls and auditoriums, such as the Onassis Cultural Center (Athens, 2014) or the A.S. Rymer Auditorium (York,
Figure 2.1: Still from Syxysis.

2011), and experimental music venues such as I-R-L (Paris, 2012), NK (Berlin, 2012), Fylkingen (Stockholm, 2012), Knot Gallery (Athens, 2011), Polytechno (Corfu, 2011). The usb memory stick also features a 25-minute studio version (video with stereo sound) as well as a 13 high-resolution still images—snapshots of generated waveforms—see e.g. images 2.1 and 4.13 on page 60.

2.5 Anotropia (or: do violinists dream of Fourier transforms?)

Anotropia (or: do violinists dream of Fourier transforms?) has been conceived and realised as a music performance that mobilises a music score, a computer and a series of loudspeakers in order to mediate a violin(ist). ‘Anotropia’ is a medical term and stands for the tendency of the eyes to turn upwards and away from the visual axis. Throughout the performance, a series of timbres emanate and morph to each other, this way, cultivating a state that I understand as an ‘auditory anotropia’—a failure to converge on some thematic timbre which is nevertheless implied throughout. A performance involves a violinist, a violin equipped with a miniature microphone on its bridge, the music score, a computer running custom software, five loudspeakers and an additional computer screen. The piece’s fixed duration is 5’34’’. 
The project has been commissioned by the Center of Contemporary Music Research (KSYME-CMRC)\(^2\) to be performed by violinist Tania Sikelianou in a concert featuring contemporary music for violin. I composed the work the fall of 2011 in Athens (at KSYME-CMRC’s facilities), as well as my then place of residence in Heraklion and while traveling between those two cities. During that time and given that Tania Sikelianou was not based in any of these cities, I would typically send her parts of the score and software prototypes, waiting for her recorded response so that I could implement changes and fine tune the work accordingly. At subsequent stages and before the work’s official premiere, we also realised a number of rehearsals at KSYME-CMRC facilities in Athens. *Anotropia* (*or: do violinists dream of Fourier transforms?*) has been publicly performed only once at Knot Gallery in Athens (2011).

The corresponding folder (*/4. Anotropia/*) in the memory stick features a low-definition video with stereophonic sound from the aforementioned performance (recorded by Costas Mantzoros); the *Performance* subfolder comprises the material necessary to perform the work, namely the score for the violin part and the original software used. The latter has been implemented as a customised SuperCollider application bundle (for Macintosh computers): this application bundle comprises elements of the actual SuperCollider distribution (of that time), as well as additional audio files and code I created myself (my code can be seen in the */4. Anotropia/performance/Anotropia.app/Contents/Resources /SCClassLibrary/modifyStartup.sc* file)—note that this application bundle is not guaranteed to work on contemporary Macintosh systems.

\[2.6 \textbf{Donwtime: Post-domestic Fiction}\]

*Donwtime: Post-domestic Fiction* interrogates the functionality of various found appliances which are interconnected into a complex nexus of interactions between computer-generated audio and human input. The project is the collective outcome of the *DamnLab: Creative Coding and New Media* workshop, curated by Maria Varela and coordinated by myself. The workshop took place in the project space Frown Tails in Athens between November 2011 and February 2012. During the workshop, and after having introduced the participants to a number of technologies such as micro-controllers and algorithmic computer graphics, we collectively worked on various conceptual and technological ideas to eventually realise *Donwtime: Post-domestic Fiction*—an interactive installation piece which conceptually revolves around the notion of ‘Downtime’, i.e. the period of time during which a system remains unavailable or fails to provide or perform its primary function. The workshop participants have been: Maria Varela, Ioanna Aggelopoulou,\(^2\)

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\(^2\)A research institution based in Athens, Greece, founded by I. Xenakis during his brief relocation in Greece the early 1980s.
Nefeli Georgakopoulou, Veroniki Korakidou, Antonis Lyras and Afroditi Psarra. For its greatest part the project has been developed collectively; we would typically brainstorm together before taking any decision. I would typically guide the participants in implementing certain hacks, nevertheless there have been cases where the participants alone gave solutions to difficult problems. Programming was almost exclusively carried out by myself, yet with respect to what we would collectively decide during the various listening sessions that took place.

The project employs several appliances which have been hacked/tinkered-with to be somehow given a function within a broader system of interactions—see section 5.4.2 on page 77 for more details. The ‘brain’ of this system comprises an electronics board structured around a programmable micro-controller interconnected with several auxiliary circuit and a computer running custom software. The latter has been, again, implemented as a customised SuperCollider application bundle (for my own code refer to /5. Downtime/DownTime.app/Contents/Resources/SCClassLibrary/modifyStartup.sc).

*Donwtime: Post-domestic Fiction* resulted in four public exhibitions: at Frown Tails facilities (Athens, 2012)—see image 2.2, at Kokkona Buriti art laboratory (Syros, 2012), at Amber12 festival for New Media Art (Istanbul, 2012) (a short video recording shot by Danai Koutsomichali is included in the usb-stick) and at PixelX festival (Bergen, 2012). The installation’s dimensions are approximately 4x2m. Note that the original system has been through extended modifications for each incarnation of the project (the code included in the usb-stick represents the final version), especially as far as the audio part is concerned. The usb memory stick also features the installation’s trailer (the video has been shot, edited and subtitled by Aggeliki Hatzi; sound design is by myself) which features participants’ interviews and scenes from the work’s premiere in Athens,
2.7 Å

Å has been conceived after the particular sound-reproduction rig, the acoustics, the lighting system and the architecture (an igloo-shaped room that used to be part of a turbine factory) of Audiorama, a venue for electronic music and drama situated in Stockholm’s Skeppsholmen art district—see figure 2.3. Å has been composed while I was working as a guest composer at EMS\(^3\) in Stockholm during the spring of 2012. The work has been publicly performed only once, at Audiorama in 2012. Å requires 17 monitor loudspeakers in a dome configuration, four subwoofers and a computer-controlled lightning system along with LED wall-washers on all walls. The audio material used in the work is a monophonic recording of EMS’ Serge modular system, originally recorded within the context of the Marinos Koutomichalis è stato eliminato project. Audio reproduction and the lightning track are to be addressed by some computer system equipped with the necessary interfaces. The fixed duration of the performance is 14’00”. The Å folder in the accompanying usb-stick contains a video recording (created by Robin McGinley) with monophonic sound of the entire performance.

\(^3\)Elektron Musik Studio: the Swedish national centre for electronic music and sound art.
2.8 **Bastard Noise**

*Bastard noise* has been also composed and recorded while I was working as a guest composer at EMS. The project revolves around a hybrid feedback loop between a computer with SuperCollider and a Buchla modular system sending audio and control signals to each other. The work has been conceived as a response to some of the available technologies at EMS—i.e. a Buchla Modular system equipped with a special MIDI-to-CV module and a powerful computer equipped with a multichannel audio interface and a multichannel MIDI interface. The original recordings have been subsequently edited in my home studio in order to make a 48’44” long audio album comprised of five tracks. The entire album (stereo, 24bit/48Khz) may be found in the accompanying usb-stick in the corresponding folder (/7. Bastard Noise/).

2.9 **Marinos Koutsomichalis è stato eliminato**

Another project that has been also conceived and recorded during my residency at EMS. *Marinos Koutsomichalis è stato eliminato* revolves around EMS’ Serge modular system which I interrogated in all sorts of ways to end up with a series of recordings—all documents of an unconditional exploration of the machine. I subsequently edited those recordings to create a database of audio which has been the basis of two studio albums—namely *Ereignis* (which has been released as an LP from Holotype Records, Athens, 2015) and #2, as well as of a series of audio performances. The latter took place in various venues and festivals throughout Europe, namely: Cinema Obliô (Lausanne, 2012), Lady Bar (Basel, 2012), Scopitone (Paris 2012), KKWNE Radio (Paris, 2012), NOISE=NOISE (London, 2012), v22 Summer Club (London, 2012), Electric Nights Festival (Athens, 2012), Audio Blast Festival (Nantes, 2012), Low Resistance Festival (Athens, 2013), Dome of Visions (Copenhagen, 2014). For those performances I have used a series of different audio players—two of those, namely *AmbiDeck* and *ExpPlayer*, can be found in the /additional_code folder in the usb memory stick—via which I can select and spatialise material from the aforementioned database. The two albums mentioned above (having a total duration of 91’16”), as well as a live video recording of my performance at Dome of Visions (made by Jørgen Teller and dubbed with audio recorded by myself) can be also found in the /8. Eliminato folder in the memory stick.
2.10 14.7 #1: Thessaloniki

14.7 #1: Thessaloniki has been conceived as a site-specific installation piece, for the inauguration of the 100 years since Thessaloniki was annexed to Greece and on the occasion of the ‘Action Field Kodra’ festival (Thessaloniki, 2012). The work has been structured around a reactive sonic sculpture, see figure 2.4. Visitors are invited to freely position seven speakers on top of the 14 available columns, this way unveiling in space different audio streams and composing in-situ a particular sonic configuration. The available sound streams consists of miscellaneous songs from the city’s song contest, 1962–07. In its final form the installation has been the collective outcome of my collaboration with Maria Varela and Konstantinia Vafeiadou; we refined the original idea and technically implemented the work together, also employing various workers and technicians to construct the necessary parts. The dimensions of the entire construction are approximately 12x0.15x0.8m. It is made of wood and PVC. Hidden off-view are several audio players, each performing a different selection of winning songs from the now obsolete city’s song contest. Using a total of more than 300 meters of internal wiring, audio from a couple of DIY amplifiers is routed to a pair of metal laminae situated within a special laser-cut plastic construction which has been installed at the top of each column. A similar construction has been installed on the base of each speaker, so that when it is positioned on the top of some column current flows to it, this way reproducing sound. Image 3.3 on page 40 demonstrates the installation as exhibited at Action Field Kodra festival. The /9. 14.7 #1 Thessaloniki/ folder in the usb memory stick contains a short video (filmed by Georgios Fleggas; sound-design by myself) with footage from the work’s exhibition as well as from its installation.
2.11 The Buchla Project

The Buchla Project has been conceived as an attempt to unconditionally interrogate a Buchla modular system in all sorts of ways. This project has been also recorded while being a guest composer in EMS, and while also working on Marinos Koutsomichalis è stato eliminato which is similar in spirit. I experimented with EMS’ Buchla modular for a period of almost one month, attempting all sorts of different configurations and working methodologies. This way I realised dozens of audio recordings which I subsequently edited to end up with a database of 40 audio tracks (monophonic, stereophonic, quadrophonic, five-channel and six-channel ones). The total duration of the material is approximately nine hours. Several subsequent live performances have been entirely based on this material. These took place at Frown Tails (Athens, 2013), Implode Festival (Chalkida, 2013), Korskirken church (Vallekiilde, 2013), Sparkling Sound Festival (accommodated in Dansekapelet, Copenhagen, 2013). A 10.8 multichannel performance took place at Noise In and As Music Conference (Huddesfield, 2013). For these performances I have been also based on custom audio-players such as AmbiDeck and ExpPlayer. The original edited recordings are all included in usb memory stick, in the /10. Buchla/ folder—note that multichannel tracks are non-interleaved.

2.12 SoundWalk @ Lake Vistonida

SoundWalk @ Lake Vistonida emerged out of a field-recording workshop for children commissioned by the Delta Nestos Lakes Vistonida-Ismarida Management Body and curated by F.E.X. and P.A.K.E.THRA (both are cultural organisations situated in the city of Xanthi in North Greece) for the occasion of the World Wetlands Day in February 2013. The workshop took place at Porto Lagos within the greater area of the Lake Vistonida, where I extensively recorded the habitat, alone as well as in conduction with the workshop participants. Using those recordings I subsequently composed a studio piece and also realised a performance at the Folk Museum of Xanthi. The performance has been intended as a demonstration of how environmental audio may be used within an artistic context. For this performance I also relied on AmbiDeck player. The studio composition has been released by the independent label Chrysallida in a limited edition of cds—see figure 2.5 on the next page—and may be found in its entirety in the accompanying usb-stick (folder 11. Lake Vistonida/, as interleaved audio 24bit/96Khz). The /Performance subfolder, then, comprises all the original recordings I used for both the performance in Xanthi and the studio release; using AmbiDeck, or some similar player, it is possible to replicate these works out of the former.
2.13 Subception

Subception has been conceived and realised during my artist residency at Q-O2 organisation in Brussels, the March of 2013. Catalytic for the realisation of this project has been an architectural ‘anomaly’ in the space I was working—an horizontal slot in the wall that separated two rooms from each other. After having initially experimented in other directions, I decided to exploit this anomaly and make it part of the work. Subception ended up as a site-dependent installation piece for generative sound, light and computer graphics. Using abstract audio and visual stimuli I intend to enact an uncanny audi-ovisual architecture that challenges the visitor to engage with his or her own intrinsic subliminal responses, hence the name of the project which stands for subliminal perception. Subception requires a light-proof space of variable dimensions with four monitor loudspeakers (facing in various directions) and a subwoofer. The audio part comprises of four independent channels of abstract synthetic sounds that are created algorithmically using the SuperCollider programming environment—code is included in the /12. Subception/code folder in the usb memory stick. Computer graphics are projected from an adjacent room on a horizontal slot of dimensions approximately 1x0.05x0.05m—the back side of this slot should be covered with vellum paper or some similar translucent material. This slim opening operates both as a very small screen and also as a source of light. Since it is the only available light source within space, changes in the projection have a magnified spatial footprint. I programmed the visual part using C++—the folder /12. Subception/Visuals contains this code, note, however, that it has to be linked with the Cinder framework4 which is not included herein. Communication between the audio and the visual parts has been established using the Open Sound Control (OSC) protocol. Hitherto the work has been only presented once to the public at Q-O2 and

following my residency—the project’s folder in the usb memory stick features a video trailer with excerpts from this installation.

2.14 **LLEAPP**

For the purposes of the fourth LLEAPP (Laboratory for Laptop and Electronic Audio Performance Practice), myself and several other artists from Europe and America have been invited in the university of Edinburgh where, under the musical direction of Jan Hendrickse, we developed a site-specific collective improvised performance/installation inspired by Homer’s Odyssey. LLEAPP took place at Inspace, University of Edinburgh. Over a period of three days we did several rehearsals, improvisation exercises and two public performances. Apart from myself and Jan Hendrickse, the participant artists have been: Sean Williams, Jules Rawlinson, Lauren Hayes, Owen Green, Christos Michalakos, Emma Lloyd, Adam Linson, Radek Rudnicki, Rob Canning, Frauke Aulbert, Bill Vine and Amidt Patel. We used a wide range of equipment, namely: a DIY modular synthesizer, various DIY electronic apparatuses, custom software realised in SuperCollider and PureData programming environments, an augmented drum-kit, a violin, a double-bass, various synthesisers and sound modules, laptops, various pieces of software, loudspeakers, found objects, microphones and miscellaneous paraphernalia. The group also featured a singer/vocalist. For my parts I used the SuperCollider programming environment both to synthesise abstract sounds as well as to reproduce and further process various recordings from my archive. An audio recording of our final performance (interleaved audio, 24bit/48Khz) is to be found in the memory stick in the /13. LLEAPP13/ folder. The recording was made by Sean Williams.

2.15 **Schizoid Cityscapes**

*Schizoid Cityscapes* has been realised for the Afresh group exhibition at the Greek National Museum of Contemporary Art in central Athens (where it was also premiered the fall of 2013 and for a period of several months). The work has been conceived as a series of site-specific audio-mediated urban sound-walks while I was in Copenhagen the June of 2013 in the context of a Danish International Visiting Artist (DIVA) residency program. *Schizoid Cityscapes* is about the establishment of a ‘non topos’ where two valid yet contradictory realities antagonise and clash. This is achieved by means of inviting the audience to follow a predefined route in the city while listening through headphones to audio recordings of equivalent sound-walks in other cities. After several conversations with the exhibition’s curators we had already agreed on a kind of project that would
somehow involve sound-walking in the city. Eventually, I decided to dedicate a large part of my DIVA residency to this project, which put me to the rather schizoid situation of working on a site-dependent project to be presented elsewhere. This is when I conceived the idea of a schizoid engagement with a city and I started experimenting accordingly. The work has been eventually finalised during the next few months in Athens. The first incarnation of Schizoid Cityscapes was realised there and featured ambulatory recordings realised in the cities of Amsterdam, Florence, Gent, Istanbul and York. These recordings originated from my archive and have all being realised at previous times and within the context of other projects.

During an actual exhibition of Schizoid Cityscapes, a printed map with instructions as well as an audio-player and a sterilised pair of headphones are handed to visitors so that they may realise the sound-walk on their own. Printed materials could be also exhibited within the museum/gallery space, as has been the case with the Athenian incarnation of the project—see e.g. figure 2.6. While I am intending to create subsequent versions of the work in other cities, no other exhibition has been realised hitherto. The usb memory stick does not contain any relevant audio/video documentation; Schizoid Cityscapes prerequisites the presence of an embodied audience within a particular urban setting and, as such, cannot be documented this way. The corresponding folder in the memory stick (/14. Schizoid Cityscapes/) only contains a number of photos from the exhibition, as well as the two sides of the flyer that has been handed to the visitors.
2.16 *Oiko-nomic Threads*

*Oiko-nomic Threads* is a collective installation project that revolves around the idea of labour. The work has been structured around the real-time production of a textile through an obsolete knitting machine which has been tinkered with to be algorithmically controlled by a computer. The decoration of the woven textile emerges from the computer’s interpretation of contemporary financial data, that are encoded and processed using patterns inspired by Greek folk art and according to a complex automaton. The project has been commissioned from the Greek National Documentation Centre for ‘Afresh’ Group exhibition at the Greek National Museum of Contemporary Art. The work has been collectively conceived and developed over a period of several months from the spring of 2014 until the fall of the same year by myself, Maria Varela and Afroditi Psarra. We primarily developed the work on Psarra’s workspace in central Athens. *Oiko-nomic Threads* has been conceived with respect to each of the artists’s particular interests and technical expertise and after having researched the archives of the Greek Documentation Centre for datasets potentially interesting to work with. *Oiko-nomic Threads* proved a highly successful project and has been publicly presented three times in prestigious spaces, namely the Greek National Museum of Contemporary Art (Athens, 2013-14), Transmediale14 (Berlin, 2014), Bozar Centre for Fine Arts (Brussels, 2014). More, generated textiles have been exhibited independently in the context of the Future Innovators Summit, Ars Prix Electronica (Linz, 2014) and at the Microsoft Research Studio 99 (Seattle, 2014). The project has been also discussed in four conferences, namely the ACM International Symposium on Wearable Computers (Seattle, 2014), Subtle Technologies Festival (Toronto, 2014), Creativity: Innovative, Open and Economically Sustainable Models of Creative Production (Athens, 2013), Electronic Visualisation and the Arts Conference (London, 2015) [Koutsomichalis and Psarra, 2015, Koutsomichalis et al., 2013, 2014a,b].

Technically speaking, the installation is structured around a Brother KH-950i knitting machine which we have hacked (employing a micro-controller) in order to have it controlled from a computer sending messages over serial connection. The computer, running a custom algorithm (programmed using C++ programming language and using the openCV framework) produces a generative design which may be knitted to the machine in real-time. The original code bundle is included in the usb memory stick in the /15. Oiko-nomic Threads/oiko-nomic-threads code/ folder: the bundle includes the code for the micro-controller and the computer, as well as the code for a series of tests and auxiliary applications. Note that in order to compile the application a series of dependencies have to be met; these are all described in the /15. Oiko-nomic
Figure 2.7: DIY serial controller.

Threads/oiko-nomic-threads code/README.rd file. The necessary mar_utils header (a series of generic functions and templates I have coded) and the arduino-serial-lib source/header files (my own C++ adaptation of Tod E. Kurt’s arduino C serial library) can be found in the /additional_code folder. Finally, a video trailer shot during the exhibition of the project at the Greek National Museum of Contemporary Art is located in the /15. Oiko-nomic Threads/ folder—this video has been shot by Aggeliki Hatzi.

2.17 Efterklang

Efterklang has been conceived and composed while I was a resident artist at the Visby International Center for Composers in Gotland, Sweden the January of 2014. After having experimented with the various other pieces of technology found at studio Alpha, I decided to structure a project around a T.C. electronic 6000 mk2 reverb unit. I used a single sample with the nominal 0dbfs value to drive all the factory presets of the unit and meticulously recorded all of its triggered responses. I subsequently edited and normalised them, to end up with a database of thousands of snippets of pure digital reverberations. Efterklang ended up being a four-channel audio performance (albeit

\footnote{Note also that the current configuration assumes the presence of \texttt{findBoost.cmake} and \texttt{findOpenCv.cmake} \texttt{cmake} modules in the \texttt{cmake/Modules} folder. These have to be provided for the \texttt{cmake} utility to properly find the Boost and OpenCv frameworks}

\footnote{The original code by Kurt can be found in \url{https://github.com/todbot/arduino-serial/} (accessed September 22, 2015) and is distributed under a MIT license—see \url{https://github.com/todbot/arduino-serial/blob/master/LICENSE} (accessed September 22, 2015)
stereo versions are also possible) that explores states of digital reverberation by means of selectively sustaining and juxtaposing spectra from this database. It is this way intended to immerse the listener into an ever-reverberant sonic environment. In order to process, juxtapose and spatialise material from the database I developed a program in SuperCollider that allows me to select, spectrally freeze and time-stretch up to five responses simultaneously. This code as well as the recorded responses can be found under the /16. Efterklang/Performance folder in the usb-stick. For the performances of the work I typically use a DIY serial controller (see image 2.7 on the previous page) which I made using an arduino micro-controller, multiplexer chips and various electronic components. (The custom SuperCollider library (MKArdControl2.sc) and the arduino sketch (MKArdControl2Firmata.ino) that are necessary for this controller to operate can be found in the /additional_code folder in the memory stick.) Efterklang has been premiered at Fylkingen (Stockholm, 2014) and subsequently presented at 6 D.O.G.S (Athens, 2014)—a stereo recording of this performance can be found in the corresponding folder in the usb-stick—at the Timely International Conference on Timing and Time Perception (Corfu, 2014), at the Electric Nights festival (Athens, 2014) and at the HeadQuarters club (Aarhus, 2014). The duration of a typical performance is between 20 minutes and one hour.

2.18 Impulsion

Impulsion explores the contingent outcome of arbitrarily chained and randomly parametrised image processing units operating on a singleton white-coloured pixel. The project has been conceived as an adaption of Efterklang in the visual domain. It has been realised in my place of residence in Heraklion, Greece, using my laptop and a series
of software tools, most importantly Apple’s CoreImage framework. To access it, I have used Marc Liyanage’s CoreImage tool\(^7\) as well as a SuperCollider script which can be found in the /17. Impulsion/ folder in the usb memory stick. The project resulted in a number of images—see e.g. figures 2.8 on the preceding page, 2.9 and 3.9 on page 47—of various dimensions and resolutions that may be subsequently presented employing a variety of media (computer screens, digital prints, projections, etcetera). Digital prints from Impulsion have been presented publicly in the context of the uP group exhibition curated by metamatic:taf that took place at Thessaloniki and at Athens in 2014. For the occasion of Luciano Benetton’s Imago Mundi Collection, I hired a professional painter (Dora Belegrinou) to paint one of these images on an canvas (see figure 3.10 on page 48); this canvas is now part of Luciano Benetton’s collection which has been exhibited in the context of the Map of The New Art group exhibition in Fondazione Giorgio Cini (Venice, 2015). The usb memory stick features all 55 images as digital files (tiff) in their original dimensions in the /17. Impulsion/ folder. It has to be noted that many of these images have transparent parts and therefore should be viewed with some piece of software that displays transparency correctly.

\(^{7}\) The CoreImage tool can be found at https://github.com/liyanage/coreimagetool, accessed September 23, 2015
Chapter 3

Interfaces

3.1 Introduction

Different kinds of destination media are encountered in my practice; these are to be understood as public interfaces to broader production hybrids (projects). Interfaces are not to be thought of as unidirectional ends that merely channel content to an audience. On the contrary, they transfigure production hybrids in a rather reflexive (and often recursive) fashion. An interface determines the ways an audience will engage/interact with a project, as well as the ways the integrals of the latter will be dealt-with poetically. At the end of the day, and as already illustrated in the previous chapter, projects are more often than not given flesh on the account of particular interfaces. On this respect, an interface is an additional methodological treaty according to which production ecosystems are forged, refashioned, appropriated and/or transmediated. It follows that the introduction of different interface to an existent project will modulate the entire hybrid in all sorts of ways. Accordingly, it is often the case in my practice that projects are interfaced in more than one way, this way spawning artefacts across a wide range of media. It is often the case, too, that interfaces are stacked on top of another (in a transmediating fashion); e.g. when a performance is recorded to be later distributed as fixed audio, or when audio/video footage from some installation is presented—actually, for its greatest part the submitted portfolio consists of such kinds of transmediations. Finally, there are certain cases when the applied interfaces constitute complex and reflexive hybrids themselves; ones which defy strict classification.

Under these premises, projects are typically interfaced in different fashions to result in different conceptualisations and phenomenological embodiments of their very constituents. The underlying principles of a project are always bound—albeit not obliged—to be interfaced in alternative ways within the context of some future incarnation and the
resulting art-works are always subjected to further re-/trans-mediation. That is to say that each project implies a whole series of contingent, not-yet-actualised artworks. In that vein, a project is never ‘done’; it rather remains in an ever-latent state as it always might be transfigured in the future\(^1\). From my point of view, each artefact/event/hybrid presented to an audience is to be understood as an unique interface bound to particular exhibition specifics. Each live performance of an audio composition, for instance, is to be dealt with differently according to the specifics of the site in terms of acoustics, architecture, reproduction equipment, audience, etcetera. Likely, setting up some installation-based project is bound to the planning of the broader exhibition, or to the architecture of the accommodating space. Intending hypermediacy, rather than attempting to normalise any anomalies or particularities, I typically try to incorporate the specific qualities of each situation in the work—that is to cast an interface opaque and explicit.

Throughout the rest of this chapter, I will elaborate on the most significant interfaces encountered in my submitted portfolio. The following categorisation should not be taken literally, nonetheless; as already mentioned and as to be further demonstrated, the interfaces encountered in my practice often transcend literal classification. The proposed stratification should be understood as representing prominent traits to the interfaces encountered, rather than the latter per-se.

### 3.2 Database and Catalogue æsthetics

Manovich has argued that in contemporary societies, database comes to function as a cultural form of its own [Manovich, 2001, p. 57]. Interestingly enough, being asked in an interview under what circumstances a database could be regarded as an art form on its own, Manovich avoided a direct answer and rather rhetorically transposed the question into one regarding the definition of a narrative—he does, nevertheless, point out that databases already exhibit ‘structural organisation, language and interesting data’ and as such that they may be considered as a kind of ‘meta ready-made’ [Razumova, 2000]. Following a similar train of thought, in ‘Catalogue æsthetics: Database In and As Music’ I elaborate upon the idea of ‘catalogue aesthetics’ and ‘catalogue poetics’ in a music context [Koutsomichalis, 2016]. There, I account for the 21st century listening paradigm as dynamic, reflexive, distributed and entwined with information retrieval and social media networking; I then conclude that in the age of big data, audiences

\(^1\)Of course, the extent to which a project may be interfaced, the particular ways in which this may happen and the heterogeneity of the resulting outcomes, is subjected to the project’s specifics, as well as to associated aesthetic and logistical concerns. It does occur that certain projects are interfaced multiple times and in different ways while certain others are only interfaced once or twice.
are no longer being passively exposed to music but, instead, are expected to dynamically traverse collections of (big) data and, employing several overlapping interfaces, to re-synthesise and to refashion existent musical content and/or to contribute their own. Following, I argue that existent compositional schemata are rather incompatible for such listening attitudes and I examine the ways in which (big) databases, being the predominate symbolic forms of our times, may suggest new compositional and morphological traits. To boot, I present relevant music examples—both in historical retrospective and with respect to contemporary practice. I eventually conclude that (big) database may function as a music form, much in the same way that a sonata or a concerto do.

In tandem with the above, works such as The Buchla Project or Impulsion are to be understood as my pragmatic response to the question of database-as-art. In both cases individual elements are made part of a broader process—a certain narrative—which is only exemplified with a database format. As to be further discussed in section 5.4.1 on page 75, the notion of the database is integral to the methodology through which I mediate the constituent materials in those two projects. In the introduction I briefly referred to Gidal’s idea of art as a record of its own making. In both the aforementioned cases, a database can be thought of as the record of the broader processes that govern the project much in the same way that singleton entries are records of the individual processes that govern their own creation. An isolated audio track from The Buchla Project or a sole image from Impulsion may reflect the specifics of its own making, yet they cannot communicate the most essential aspects of the broader project to which they belong. Neither of these projects is merely about creating an interesting piece of art, but, more importantly, about arriving at a series of works that each exemplifies contingent states of a broader hybrid. Accordingly, even if it is still meaningful to present individual entries for their particular properties, it is only through a database that the broader compositional approach may be interfaced. As the last sentence implies, a database may be (and in reality often is) further interfaced; e.g. each time a singleton image from Impulsion is presented somewhere or each time a track from The Buchla Project is used as a stand-alone composition or in the context of some performance. In that vein database (especially when ‘big’) is a kind of meta-interface, one that has to be further interfaced in order to be made accessible to experience—see also [Koutsomichalis, 2016].

The idea of ‘database as art’ implies a certain kind of catalogue aesthetics, in that the audience is not necessarily expected to experience the work in its entirety nor in a linear way. As a matter of fact this is often impossible to do; consider e.g. that The Buchla Project’s total duration exceeds nine hours. In such cases one is rather encouraged to construct his or her own encounters with the material provided; s/he could opt for the particular tracks/images s/he prefers, or to rather randomly shuffle the database.
In contemporary developed societies such sorts of encounters are neither unknown nor uncommon amongst teenagers that are seriously immersed in various kinds of media-collections, be it for iPod playlists, YouTube or P2P networks [Bull, 2005, Kamalzadeh et al., 2012, Kasaras, 2002, Voida et al., 2005]. Such kinds of audience engagement essentially oppose the Renaissance perspective model according to which there is an ideal place from where the work of art should be surveyed [Panofsky, 1997]. No such ideal locus exists here; an audience is rather encouraged to explore nodes scattered in space in a non-linear and non-hierarchical way, as also elaborated upon in [Koutsomichalis, 2016]. To boot, catalogue aesthetics are not at all unknown to the art-world, consider e.g. the Surrealist exhibition display in Paris 1938, where the very way in which the various works of art have been positioned in space was to be perceived as a way to announce the Surrealists’ distance from the aesthetic conventions of the time [Bishop, 2005, p. 20], Peter Greenaway’s 100 objects to represent the world, or Dieter Roth’s influential Bok—a book with pages that could be rearranged in any order. As far as music is concerned, there are numerous examples such as Yasunao Tone’s mp3 deviations series, Chris Watson’s Outside the Circle of Fire or Toshiya Tsunoda’s Extract from field recording archive album series, which may all be understood as being essentially catalogues of audio material. J. S. Bach’s Well-tempered Clavier, even if composed centuries ago, is surprisingly enough an explicit case of database music, too. It consists of self-contained standalone tracks that can be listened to or performed either alone or with respect to each other. Furthermore, each of them does explore thematically a particular kind of instrument (the clavier) and various aspects of it—much alike The Buchla Project.

3.3 Performance

Performance is integral to my practice, especially as far as projects dealing with sound are concerned. By performance, herein, I do not refer to Performance Art but to simply presenting event-bound art to a real audience. A performance is, then, to be understood as a primarily temporal event—an audience being expected to engage with it from some certain beginning to a certain end, and myself being typically able to somehow modulate its specifics. This way I may accelerate my particular aesthetic objectives more efficiently/reflexively and in response to each given situation. This is particularly meaningful in the case of audio-based works: since sound is fundamentally entangled with time, space, architecture and the available reproduction technology, the only way to guarantee that something sounds the way I want it to sound like is only when I am able to appropriate it with respect to those specifics. Note that while this is may be true in the case of installation-based interfaces, it is typically impossible to achieve
real-time control in such a context. When performing audio, on the other hand, I am able to prolong or shorten sections and to appropriate dynamics so that they occur at the right moment and with respect to how I believe an audience may experience time in some particular situation. This way a loosely-modelled event-specific approach may be achieved, as also accounted for in section 5.2.2 on page 64.

Whenever performances occur in my practice, I typically attempt to appropriate a project’s heuristics according to the former’s specifics and not vice versa. That is to say that the focus is on phenomenological embodiment and not on whatever extra-contextual directives—even if the latter are fundamental to some project. Performance essentially introduces additional integrals (e.g. the audience, the architecture, the loudspeakers) to a project which have to be somehow accounted for since hypermediacy is sought. To demonstrate how projects may be uniquely refashioned in a performance context, I will
describe a characteristic case which took place in London the 7th of July 2012. I was supposed to perform in a cinema, yet it turned out that this particular venue was rather informal and the sound system was inadequate for what I had in mind. The project I was supposed to perform was Marinos Koutsomichalis è stato eliminato, however under these circumstances there was no point in simply presenting relevant material because with the available PA it was impossible to reproduce them properly. Eventually, I constructed an entirely new narrative as a response to the specifics of the occasion. I begun with material from Marinos Koutsomichalis è stato eliminato performed at barely audible levels for several minutes so that the audience would get accustomed to the low intensity. Then, I gradually raised the volume until audio got severely distorted—this way exposing and, on the same time, foregrounding the very inadequacy of the loudspeakers as an essential treaty, also creating a sense of danger. This case clearly exemplifies hypermediacy in that the specifics of the reproduction technology are kept opaque and accentuated.

As already discussed, the interfaces encountered in my practice often transcend strict classification. There are indeed several cases of projects situated somewhere between performance and installation. Consider for example À, Passeggio Sonoro, In:Out or LLEAPP 13, which do presuppose an embodied audience as a literal presence in space, even if they primarily revolve around performance practices. Consider also the case of Oiko-nomic Threads, 14.7 #1 Thessaloniki and Downtime: Post-domestic Fiction, which, albeit being installations, incorporate accentuated performance elements. In the case of Oiko-nomic Threads an installation essentially foregrounds performance traits: what is actually installed is a fully operational fabrication system. In the context of an
installation we often set the exhibited equipment in operation so that the opposite is also true: since performances revolve around materials necessarily scattered in space to resemble some sort of a workplace, the former also mediates installation traits. On their respect 14.7 #1 Thessaloniki and Downtime: Post-domestic Fiction engage audiences into certain behaviours that transcend a purely installation/performance context. In both cases, the various material constituents are architecturally organised in a way that defines certain behavioural patterns which, in turn, favour particular kinds of audience embodiment; the visitors are, then, invited to interact with those works in order to collectively create their own sonic contingencies. In the case of 14.7 #1 Thessaloniki, the visitors have to physically walk a distance of 12 meters in order to interact with the various parts of the work which, in turn, suggest: a. that they will eventually embody the resulting sound from several different points in space, this way unintentionally emphasising different audio sources, b. that their interaction is phenomenologically linked to substantial physical activity and c. that they are not able to simultaneously interact with the work and also appreciate the cumulative audio outcome (they have to be several meters away from the construction to do it)—see also figure 3.3 on the preceding page. On its account, Downtime: Post-domestic Fiction has to be operated from proximity and as such it keeps the visitors ‘attached’ to the various apparatuses it consists of, while it implicitly suggests that they should keep tweaking them constantly (evidently, there is not much to do when you are close to a wall full of operable funny-looking objects). This exhortation becomes even more explicit once one experiences the dramatical sonority shifts in response to his or her actions. In both cases, a purely performative scenario would account for completely different audience experiences. For instance, to watch artists re-positioning small loudspeakers on top of the available columns does not force individuals to experience the work from various spots, and does not cause them to engage with another. In a similar vein, Downtime: Post-domestic Fiction comprises of operable objects that are to be understood as nodes in a broader dysfunctional system and the work revolves around such as system’s temporal contingencies—as to be further discussed in section 5.4.2 on page 77: in the case of a purely performative version, however, this particular insight would no longer be possible since the audience would simply encounter a collection of weird instruments that are used by the artists to perform some kind of music.

3.4 Installation

There are two traits in Installation Art that are particularly relevant with my practice: the first concerns artworks where materials are realised in spatial terms, such as e.g. Peter Greenaway’s 100 objects to represent the world (which is essentially a collection of
objects scattered in space); the second refers to artworks that actualise space by means of materials; consider e.g. Olafur Eliasson’s *Weather Project*, which is about how a source of yellow light illuminates already existent place. Then, consider *Schizoid Cityscape* or *Subception*, which are both structured around how they refashion existent space, and *Oikonomic Threads*, *14.7 #1 Thessaloniki* and *Downtime: Post-domestic Fiction*, which exhibit a more sculptural quality. While none of this projects can collapse to simply how objects are scattered in space or to how space is being explored, those two traits are fundamental to the complex interfaces that are encountered in those cases, respectively.

Much alike the case with catalogue aesthetics, installation-driven interfaces disrupt the hierarchical and self-reflexive model that has pertained Western art since Renaissance; they rather encourage individuals to dynamically engage with space itself and/or with whatever occurs or exists within it, in their own unique ways. Accordingly to Claire Bishop, the primary difference between Installation Art and traditional media is exactly that the former presuppose an embodied viewer which experiences (rather than surveys) an artwork [Bishop, 2005, p. 6].

Likewise with my approach to performance-driven interfaces, and always faithful to a hypermedia approach, I tend to refashion or transmediate projects according to the specifics of an installation occasion. E.g. the audio part of *Downtime: Post-domestic Fiction* has been different in every single exhibition hitherto. Or, in the case of *Oikonomic Threads*, a series of different spatial configurations have been tried out, each time foregrounding different facets of a broader narrative intrinsic to the project. In Berlin (figure 3.4 on the following page), the set-up delineated a certain part of the broader space as a working area while also incorporating architectural elements specific to the exhibition (the scaffolds, that have been the theme of the entire festival). In this case the viewer was rather invited to enter the installation and to encounter its various parts from within it; during a performance, however, they had to reposition themselves outside and watch in a rather theatrical way. In Athens (figure 3.6 on page 44) the set-up has been more sculptural, as a result of the project being accommodated in a vast space where a clinical, museum specific, quality dominates. In this case audiences have been rather invited to engage into a more intellectual reading, since the installation followed a particular logic: the end result under a printout of the original raw data, the knitting machine under printouts of various technical instructions and components’ data-sheets, and the computers running an emulation of the algorithm used to operate the machine between the two. During a performance, however, the audience could approach the performer from various angles and simultaneously examine the various parts of the installation from within, accounting for a more intimate encounter with the work when compared to the Berlin’s set-up. In Brussels (figure 3.5 on the following page) the work had to be positioned in a significantly smaller space. In this case the fabrics have been...
meticulously exhibited in the wall and the computer screens pointed at the audience rather than at the operator of the machine—unlike what would be the case in a real workspace. Yet, the audience in this case is probably even more explicitly positioned inside the process of fabrication due to the intimacy and the compactness of the overall set-up.

Questions of site-specificity are raised in a series of other projects that intend to explore the way physical space and a certain set of materials mutually refashion each other—consider e.g. Subecption, Schizoid Cityscapes, and, probably to a lesser extent, Á. In Subecption, for instance, and as to be further discussed in section 5.2.3 on page 66 the audio part is designed as a response to the particular acoustics and architectural
characteristics of the surrounding space and is characterised by an ever-changing spatial footprint; this is also the case with the visual part of the work which illuminates space in different fashions, revealing, obscuring and colouring surroundings accordingly. Site-dependency is explicit herein, since for any subsequent incarnation of the work both the audio and video parts have to be appropriated and even re-composed to account for the particularities of the new accommodating space. *Schizoid Cityscapes* is both site-specific and site-dependent, in that it interrogates the architectural, symbolical and intellectual ramifications of the accommodating location and in ways determined by the latter. While there is a pre-formulated idea herein—audio reproduced through headphones while one wanders at certain parts of a city—the exact ways in which it will be actualised dramatically with respect to where the project will be accommodated. The project has been only presented in Athens, hitherto, so I did no have the opportunity to explore this in practice. In principle, however, and depending on the hosting city, *Schizoid Cityscapes* will pinpoint a different set of themes and will revolve around different audio, different architectural scenery, and a different walking attitude. These are discussed in more detail in section 5.2.1 on page 62.

### 3.5 Fixed Media

Fixed media (i.e. immutable physical or non physical artefacts such audio compositions, objects, video or image) are often encountered in my practice, albeit primarily as remediations, or in the context, of other interfaces. Such artefacts are by definition immutable and therefore will eventually normalise every element of surprise or innovation the longer an audience is exposed to them. Fixed audio and video are characteristic cases. They
demonstrate a firm and perfectly delineated temporality and, accordingly, they tend to emphasise linearity. The longer one is exposed to such a medium, the more the interfaced material is to be re-appropriated with respect to such a fixed temporality and the more the interface will eventually induce its own particular qualities. A fixed version of a work is no longer dynamic or contingent; it will instead highlight whatever structural organisation occurred during its particular making; once listened to or viewed a few times, it will exhibit proper structural qualities even if they were originally unintentional or absent. Notwithstanding, fixed audio/video is the only option when rather ‘flat’ media are involved, e.g. CDs, screenings; as such, it is often encountered in my practice, be it for documentation purposes (essentially being a transmediation) or for stand-alone artefacts. In both cases, my standard approach is to exploit and/or to foreground the medium, or in other words, to question it by means of a project and/or to expose a project’s innate—albeit latent, or subsidiary—qualities through it. Consider, for instance, the studio version of Passeggio Sonoro, which may be linear in all respects, yet it does present in the most straightforward way the particular narrative that unintentionally emerged in the production stage. This narrative, which is normally kept implicit and approached rather paradigmatically in live performances (see also also section 5.2.2 on page 64, as well as my comments in the actual code in the usb memory stick), is cast explicit herein. Thence, the fixed interface does corroborate itself not simply as a document of a performance but also as an alternative, valid in its own sake, interface to a project. Another interesting case is the that of the Marinos Koutsomichalis è stato eliminato #2 album. Throughout the album audio is occasionally channeled only to the left or the right speaker, to this way make opaque the single-perspective-ness of domestic stereophonic audio reproduction. When muting one of the two ends of a stereo pair, a shift occurs towards the other speaker as a material/physical presence and against its supposed transparency. In that sense, more than being simply an exposition of the sonic

**Figure 3.7: Subception; Q-O2.**
Chapter 3. Interfaces

Figure 3.8: Impulsion #20.

material, the album also questions constancies related with domestic audio reproduction and to some extent solidifies and investigates their material qualities.

Image is encountered in two cases in my portfolio, namely in Sygxysis (see for instance image 4.13 on page 60) and Impulsion (see for example images 3.9 on the next page, 3.8, 2.8 and 2.8 on page 33, and 2.9 on page 34). Image by definition draws attention to the spatial organisation of its contents; accordingly, it may offer a more dynamic insights to motion because of its ability to imply, rather than to represent, it. As to be further discussed in a subsequent chapter, Sygxysis mobilises waveform projection in order to expose certain qualities of the signals used that cannot be properly appreciated acoustically. This idea is further advanced employing static imagery, since certain stills from the waveform projection seem to portray more accurately the intrinsic structure and the overall spatial organisation of the signals in question, as well as certain aspects of their congenital motion patterns. These qualities are not equally explicit in the video projection which (due to its speed) blurs them in favour of a better exposition of the signals’ macroscopic behaviour in the temporal domain. Then, in Impulsion, it is fixed imagery itself—digital imagery frameworks and their mechanics, in particular—to be investigated. As already mentioned, Impulsion comprises a series of images created algorithmically by means of triggering a series of randomly chained and randomly parametrised image-processing units with a nominal white-coloured pixel. Hence, image
in this case is to be understood as an interface that foregrounds its own specifics; as one that draws upon and that intends to expose the very mechanics of how images are digitised and processed by contemporary software. Since the resulting images have been generated following machine logic (which does not necessarily adhere to the human vision paradigm), they are bound to underline very different pictorial qualities across different interfaces. As such, Impulsion images can (and should) be further interfaced and in heterogenous ways to this way allow trans-/re-mediations of all sorts. Hitherto I have experimented with various media such as CMYK prints on paper of various colours, projections on computer screens, prints on transparent film (which better highlights the transparency of certain images). I even hired a professional painter to paint Impulsion #4 onto a canvas (see image 3.10 on the next page), which is a bold example of both remediation (painting remediates digital imagery) and of hypermediacy (the viewer witnesses a computer generated image painted on canvas, so that the particular signatures of those media are made explicit).

Finally, there is a single project in my portfolio that also resulted in physical objects; that is Oiko-nomic Threads. As already discussed, the project has been conceived as an installation piece structured around digital fabrication technology. In the context
Figure 3.10: Computer-generated image painted on canvas.

Figure 3.11: Computer-generated embroidery.

Figure 3.12: Textile Exhibition; Future Innovators Summit, Ars Prix Electronica 2014. Image © by Afroditi Psarra.
of the various exhibitions of the work, several pieces of fabric have being produced using different combinations of colours—see e.g. image 3.11 on the preceding page. Such textiles are both transmediations and remediations of the project, since they intend both to exemplify the broader hybrid and the principles that govern it, as well as to physically materialise its conceptual ramifications. Initially we only exhibited such fabrics in the context of canonical installations, yet we eventually exhibited knitted textiles alone in a couple of occasions. This is, again, an example of trans-mediation, since the textiles are not to be presented in a vacuum but instead to be contextualised with reference to the original installation and, therefore, to be framed by its original conceptual concerns. Those textiles transmediate an installation that foregrounds the technology of their own making. That is to say that the ‘memory’ of some previous interface, or state of being, is echoed in the final artefact, so that the broader hybrid to which the textiles belong is eventually refashioned/remediated accordingly. Figure 3.12 on the previous page demonstrates a possible way to pragmatically address this; it shows several textiles as exhibited at the Future Innovator Summit in the Ars Prix electronica festival. It would be a bit of an exaggeration to describe this exposition as an installation, yet it is not a mere exhibition of some artefact either. It rather is a collection of artworks linked to a broader hybrid with the aid of text.
Chapter 4

Materials

4.1 Introduction

Having given an overview of the portfolio projects in chapter 2 on page 18 and having discussed the various kinds of interfaces encountered in my practice in chapter 3 on page 35, I will now examine in detail their various material constituents. They may be classified in two broad categories:

Sources that refer to already existent physical or non-physical objects or to representations of them.

Signals that refer to functions (in the mathematical sense) that I have generated, or to computer algorithms that generate such functions independently.

Methodological traits that are found in my practice are scrutinised in the next chapter, yet there are cases where methodologies/algorithms are rather approached as if materials—this is a largely contextual question as a methodology/algorithm may be either the modulator of something, what is itself modulated by something else, or both. Accordingly, some of those cases will be dealt with in this chapter.

4.2 Sources

Sources encountered in my portfolio are of several different kinds and include audio, environmental sound, musical instruments, landscapes, data, found objects and appliances and even humans, as to be scrutinised subsequently.
4.2.1 Soundscape/Landscape

As further elaborated in [Koutsomichalis, 2013b], I understand soundscapes as essentially perspectiveless, rhizomatic, and as reverberating across various perceptual, visceral and intellectual modalities. A such, their phenomenology is highly complex, contingent and impossible to capture employing straightforward phonographic practices. *Passeggio Sonoro* and *SoundWalk @ Lake Vistonida* are both experiments that explore alternative ways to (re)present a soundscape in a rather hyperrealistic way, and in tandem with the aforementioned. Both of these works are structured exclusively upon environmental recordings. One of the two acoustic layers present in *In:Out* exclusively comprises environmental audio, too—three-dimensional soundfield recordings in particular. More idiosyncratic is the case of *Schizoid Cityscapes*: an ambitious work that may be marginally contextualised within sound-walking practices. Sound-walking generally refers to ‘*any excursion whose main purpose is listening to the environment*’ [Westerkamp as cited in Drever, 2009]. In that respect *Schizoid Cityscapes* challenges the fundamentals of sound-walking in that it invites the listener to wander in an environment while listening to another. *Schizoid Cityscapes* literally employs a landscape—a cityscape, to be more precise—since the work essentially asks the audience to embody a certain part of a city: to walk within it, to be defined by its architecture, to interact with its traffic and its other inhabitants. Image 4.1 demonstrates the proposed route the audience should follow during the first exhibition of the project in the Greek National Museum of Contemporary Art in Athens.
In all those cases I have used environmental audio that I have myself\textsuperscript{1} recorded in a series of urban, rural, industrial and even subaquatic environments throughout Europe and employing a variety of recording equipment/methodologies.

### 4.2.2 Audio

Found audio, rather than synthesised or recorded sounds, has been notably used in one single case, that is 14.7 #1: Thessaloniki. As already mentioned, the project has been realised for the occasion of the one hundredth anniversary since the city of Thessaloniki was annexed to Greece. In order to maintain a conceptual link with the city’s history, the whole project was conceived upon the use of songs that had won the Thessaloniki Song Festival, a once famous annual song contest that took place between 1962-1997 and 2005-2008.

### 4.2.3 Acoustic Instruments

*Anotropia (or: do violinists dream of Fourier transforms?)* is structured around the interrogation of a violin(ist) as both material and symbolical ends, and by dint of technological mediation. A violinist is asked to interact with their instrument and to employ miscellaneous extended techniques in order to feed a computer with a stream of sustained (albeit not necessarily static) and ever-modulated textures. For its greatest part, the violin’s score features fast tremolos, scratching notes, bowing in various parts of the violin (including on and behind the bridge) and with alternating pressure, harmonics and various other extended techniques—images 4.2 and 4.3 on the next page demonstrate representative excerpts from the score. The sound of the violin is to be further processed by means of a computer running custom software, as to be further discussed in section 5.4.3 on page 82.

\textsuperscript{1}But for the case of *SoundWalk @ Lake Vistonida*, as discussed in section 2.12 on page 27.
4.2.4 Modular Synthesisers

During certain periods and for different purposes, I have conducted extended explorations of various modular synthesizers, including the CMRC-KSYME’s VCS3, EMS’ Serge and Buchla systems, Studio of Music Interaction and Polyphony’s Doepfer system, and Game of Life’s\(^2\) euro-rack system. Recordings of such synthesizers have been used in various projects as complementary material to improvise with (e.g. in In:Out), as fixed audio to be non-dynamically reproduced (e.g. in A) or as dynamic nodes in broader systems (e.g. in Bastard Noise). In all my encounters with modular synthesizers I have been primarily interested in unconditionally exploring the instrument, as explicitly demonstrated in the cases of The Buchla Project and of Marinos Koutsomichalis è stato eliminato—see also section 5.4.1 on page 75. Figures 4.4 and 4.5 on the following page demonstrate examples of modular synthesis patches.

\(^2\)Independent modular synthesis studio; Athens.
4.2.5 Digital Reverb

*Efterklang* is structured around the exploration of digital reverberation, and in particular of a T.C. Electronics System 6000 digital reverb unit, which in this case has been used as a sound-generator rather than as an effects processor. I used a single impulse with the nominal 0dbfs value to drive all the factory presets of the unit. As already discussed, all of its triggered responses have been recorded, edited and classified to form a database of pure digital reverberations that constitute the basis of the project.

4.2.6 Objects/Appliances

Miscellaneous objects and found appliances have been used in various projects as the source material to be further appropriated, augmented or transformed. In the case of *Downtime: Post-domestic Fiction*, as already mentioned, these included a domestic hand-mixer, an electronic harmonium, an antiquated Spectrum computer, a scientific apparatus (see figure 4.6 on the next page), a telephone, a photographic camera, an Atari 2600 game console, a b&w TV, a sphygmomanometer, a hair-dryer and a small fan (see figure 4.7 on the following page). *14.7 #1: Thessaloniki* features a 11 meters-long construction (see image 3.3 on page 40) made of wood, PVC columns, speaker cones, copper foils, custom-made plastic parts and more than three hundred meters of cable. The project revolved around fourteen channels of audio that have been reproduced employing seven stereo mp3-players and a series of custom-made amplifiers. *Oikonomic Threads* has been centred around a domestic knitting machine (a Brother kh-950i model, see figure 4.8 on page 56). Its exhibitions also feature a number of other objects such as various paraphernalia related to knitting, tables, and chairs.
4.2.7 Data

*Oiko-nomic Threads* is structured around the materialisation and the re-interpretation of one dataset through another. Note that it has been a prerequisite that work should somehow make use of ‘open-data’. Eventually the dataset used is a numerical record of the financial activities of the Greek National Manpower Organisation since 2008 which, according to the Greek Law, are supposed to be open to the public and accessible online. It is interesting to note that the financial data in use may be also thought of as a measure of unemployment-related activities\(^3\) which has been increasing since 2009 due

\(^3\)The primary focus of the organisation is to tackle unemployment.
to the so-called Greek debt crisis. In an attempt to foreground (de)correlations between economic models of different historical eras, the aforementioned data-set is being re-interpreted algorithmically and by means of a secondary dataset which consists of ten digitised patterns that relate to the Greek folk tradition. These patterns emerged out of an exploration of relevant archives realised by my collaborator Maria Varela. In their original form, these archives consisted of photographs and, to a greater extent, drawings that represented textiles and other folk artefacts. Examples of such patterns in their original (retrieved) format are shown in images 4.9 on the next page and 4.10 on the following page. It has to be also noted that since the notion of open-data is an important
aspect of the project, data specific to the project—i.e. the computer code—have been all uploaded online and are freely available to anyone⁴.

### 4.2.8 Humans

Human resources are integral to several portfolio projects. A violinist is mobilised in *Anotropia (or: do violinists dream of Fourier transforms?)*, a painter in *Impulsion* and a performer in the case of *Oiko-nomic Threads*. More importantly, several projects have

been exclusively and explicitly conceived and given flesh in collaboration with other individuals, namely: *Oikonomic Threads, 14.7 #1*, *Downtime: Post-domestic Fiction* and *LLEAPP 13*—see corresponding sections in chapter 2 on page 18 for detailed credits. In general, collaborations have proved of paramount importance to advancing my practice by means of exposing myself and my individual methodological approaches to invaluable feedback. More, this way I have I eventually opened up myself to entirely new kinds of materials (such as physical objects and micro-controllers), media (e.g. reactive installations) and methodologies (e.g. hardware hacking, construction, digital fabrication). The case of *Downtime: Post-domestic Fiction* has been rather special in that it has been the collective outcome of *Damn Lab* workshop. Even if my role has typically been the coordinator’s one, *Damn Lab* has been a collective work centred around D.I.W.O. practices—image 4.11 on the following page demonstrates several workshop participants in action. The idea of *Downtime: Post-domestic Fiction* emerged during the workshop and after several brainstorming and working sessions where my role has been that of a ‘regulator’ rather than that of a composer. *SoundWalk @ Lake Vistonida* also involved a workshop for high school students; in this case, however, the workshop participants were not at all involved in composition phase which has been carried out exclusively by myself.

### 4.3 Signals

Signals encountered in my portfolio include audio, waveforms, light, image and computer graphics and are to be discussed in the remaining part of this chapter.

#### 4.3.1 Waveforms

*Sygrysis* has been conceived as an audiovisual performance where two independent computer-generated signals are both visualized and audificated. Unlike traditional audio synthesis, however, which is largely agnostic to the visual qualities of a signal (aesthetically speaking), these signals have been synthesised in line with both how they would look and sound. I use the rather obscure term ‘waveform synthesis’ to differentiate the purpose of such techniques from traditional sound synthesis ones—additional technical background can be sought in my *Mapping and Visualisation with SuperCollider* book [Koutsomichalis, 2013a] where I discuss waveform synthesis and waveform visualisation techniques amongst other matters. Images 4.13 on page 60 and 4.12 on the following page are examples of waveforms synthesised in order to both look and sound interesting.
4.3.2 Audio Synthesis

Given my background in music, it comes as no surprise that audio synthesis holds a privileged position in the arsenal of materials I use in my projects. In *In:Out* I have used miscellaneous kinds of audio synthesis techniques (mostly based on granular techniques), as well as recordings of a doepfer A-100 modular synthesiser performing modulating patterns. In *Anotropia* (or: do violinists dream of Fourier transforms?), a series of spectral transformations and of real-time convolution based techniques have been mobilised to process audio captured from a microphone on the violin’s bridge. In *DownTime: Post-domestic Fiction* a complex sound-generating algorithm (based on various kinds of modulations operating on audio recordings) is controlled interactively using a series of objects and sensors. *Bastard Noise* is implemented as a hybrid feedback loop between a computer and a Buchla modular system that sends audio and control signals to each other. In both *The Buchla Project* and the *Marinos Koutsomichalis é stato eliminato*,
all sorts of modular synthesis techniques have been applied. In *Subception* a series of independent streams of abstract synthetic sounds of variable length are mixed together in certain frequency ranges. For *LLEAPP*, I have used various kinds of simple oscillators and noise generators as well as time-stretched audio recordings. Finally, in *Efterklang* I have implemented a custom synthesis module that spectrally freezes and temporally stretches reverberant impulse responses.
4.3.3 Light

Two portfolio projects also mobilise light. In *À* a light track plays the role of an additional dramatic element: LED wall-washers and a computer-controlled lighting playback controller are used to lighten the entire accommodating space with vivid red light which slowly fades out to leave the audience in complete darkness towards the end of the work. In *Subception* computer graphics projection is used as the means to illuminate the accommodating space (see, images 4.14 on the previous page and 3.7 on page 45) and this way (in conjunction with sound) to explore its phenomenological properties, as already discussed in the previous chapter.

4.3.4 Image Processing

Both *Impulsion* and *Oikonomic Threads* make heavy use of image processing algorithms—see also the code in the usb stick. As already discussed, in the case of the latter numerical data are re-interpreted and visualised with respect to a series of patterns. The algorithm is generative in nature and produces an ever-updating image with a fixed width of 160 pixels and of an infinite length—it is discussed in detail in section 5.3.1 on page 70. *Impulsion* has been conceived as an exploration of Apple’s CoreImage framework—a pixel-accurate image processing framework used to apply image filters and relevant effects within the Quartz graphics rendering layer. CoreImage is extensively used in Mac OsX (as of 10.4) and iOS (as of 5.0) operating systems. *Impulsion* explores its image generating potential by means of triggering its various filters and transformations using just a nominal-valued white-coloured pixel. The proposed algorithm relies on stochastic processes to parametrise and to interconnect the various processing units in larger systems resulting in a series of digital images of various dimensions and resolutions and is further discussed in section 5.3.2 on page 72.

4.3.5 Computer Graphics

Computer-generated graphics are encountered in the case of *Subception*, where they are back-projected on a narrow slot in a wall, as shown in image 4.14 on the previous page. Depending on various audio synthesis parameters and with respect to partly stochastic functions, the visuals modulate from stroboscopic flashes to gradually morphing colours, to clouds of straight lines that rapidly change angle and direction.
Chapter 5

Methodologies

5.1 Introduction

In this section I elaborate on the various kind of methodologies encountered throughout the submitted portfolio. Methodologies broadly refer both to my particular ways to approach a work’s materials as well as to the more sophisticated systems that are encountered in certain cases. Methodologies are classified in three broad categories:

**Juxtaposition** refers to methodologies related with how physical or abstract elements are positioned in time and/or space and with respect to each other.

**Automata** refer to generative algorithms and other self-legislating systems.

**Exploration** refers to a series of methodologies aiming at exploring certain aspects of materials either in-themselves or as nodes in broader networks.

5.2 Juxtaposition

Juxtaposition, in the sense of bringing in the same place and/or time individual components, is a common theme in my work, and will be scrutinised in detail subsequently.

5.2.1 Antagonism

Certain portfolio projects morphologically rely on an ever-agonistic opposition of two or more contradicting elements. *In:Out*, for example, structurally revolves around two concurrent albeit independent acoustic planes (hence on Ø and Å) that antagonise each
other, territorialising and de-territorialising in both the physical and the attentional space. Å and Ø have distinct spatial signatures and behaviours and are fundamentally different contextually. Ø is a sequence of urban and rural holophonic soundscapes which is spatially homogenous, ever-present, highly immersive and three-dimensional. Phenomenologically it may vary dramatically from background rural ambiences to noisy urban drones and from the delineation of an urban acoustic scene to birds’ vocalisations; yet in all cases it is largely characterised by an ubiquitous spatial foot-print, a wide dynamic range, a full spectrum with energy in broad frequency bands and a representational semiology. On the other hand, Å appears either as if originating from isolated spots or broader non-continuous areas in space or as if moving between them. Å features purely synthetic abstract sounds such as bleeps and granular noises of various sorts. **In:Out** intends to trick the audience into attentional shifts between its various acoustic constituents. Both states of equilibrium and of irreconcilability are structurally essential to the work. Therefore, the sounds selected for Ø and Å are such that they may timbrally, spectrally and morphologically advance such schemata. Ø is descriptive, highly detailed and complex (hence it could be easily antagonised by simple abstract sounds) but it does feature moments where these qualities become uncertain (so that the borders between Ø and Å may be blurred when needed). In turn, Å consists of sounds that are piercing, abstract, highly localised and with narrow spectra; under certain circumstance they may question Ø’s ubiquity and under other they may be misconceived as partials of it. Consequently, the very same sonic streams could result in being either consonant or alien with each other and with respect to subtle modulation of their volume, spatial behaviour and temporal evolution—it is my role to channel such transfigurations accordingly during a live performance, or in the studio.

**Schizoid Cityscapes** is also structured around an antagonistic relationship; one between different places. According to Michel de Certeau, a place is defined as some kind of ordering realised in spatial terms which when ‘practiced’ becomes a space [de Certeau, 1984, p. 117]. **Schizoid Cityscapes** intends to establish a non-topos (not to be confused with Augé’s notion of ‘non-place’ [Augé, 1995]) or, in other words, an inherently schizoid place, which can neither be fully ‘practiced’ nor fully conceived and experienced—yet one which remains the only available space for the audience to inhabit. I will not discuss the phenomenological repercussions of such an attempt—what is of interest here is how such an intended non-topos is ventured. Pallasmaa and Bachelard seem to agree that experience of architecture and of space is fundamentally multi-modal and multi-sensory [Bachelard, 1994, Pallasmaa, 2013]. Sound is, therefore, integral to embodying a city and is further shown to hold a key role in navigating, orientating and deciphering space and architecture—see also [Blesser and Salter, 2007, pp. 11–67]. In the words of Juhani Pallasmaa,
[sound] provides the temporal continuum in which visual impressions are embedded [Pallasmaa, 2013, pp. 53–56]

_Schizoid Cityscapes_ challenges an audience to follow a predefined route in a city while listening through headphones to audio recordings of equivalent sound-walks in other cities. This way, the typical crystallisation of an abstract _place_ into embodied _space_ is short-circuited; the aural reality antagonises the one implied by the other sensory modalities. That is to say that, empowered by a radical schizo-phonia, one is forced to concomitantly inhabit two different spaces yet with different parts of themselves.

In _Schizoid Cityscapes_ antagonism is also encountered on a cerebral level, as conceptions of different cities estrange each other in all cultural, historical, political and social respects and according to each individual’s subjective beliefs, thought patterns, and interpretation schemata. As a matter of fact, the selection of the recordings to be performed is not arbitrary but intends to focus exactly on such socio-historico-political (de-)correlations. In the first realisation of the work, Athens confronts soundscapes from Amsterdam, Florence, Gent, Istanbul and York; when compared to Athens, all these cities are characterised by different patterns in terms of religion, urban culture, and other respects. E.g. it would be highly unlikely to encounter a street-piano performance of a Bach’s score (as in a featured recording from York) or a Muezzin’s public call for prayer (as in a featured recording from Istanbul) in Athens. Accordingly, and while a city is redefined by means of another, strong conceptual and semantical links are forged between them that pinpoint on cultural, historical, political and social (de-)correlations with respect to the particularities of the proposed route and the selected audio material. This may result in an awareness shift towards those conscious and unconscious schemata responsible for defining oneself through the urban environment s/he inhabits.

### 5.2.2 Paradigmatic Composition and Hyper-narratives

According to the famous linguist and semiotician Ferdinand de Saussure, there are two major kinds of relationships within a language that are generally referred to as ‘paradigmatic’ and ‘syntagmatic’. The latter refers to the associations between elements that may be combined sequentially while the former refers to the oppositions between elements that may substitute each other [Culler, 1986, pp. 57–62]. Roland Barthes extended this distinction to other sign systems, including art [Allen, 2013, pp. 53–63]. Syntagms, therefore, broadly refer to narratives or to meaningful trajectories through individual elements, while paradigms generally account for collections of interchangeable items. According to Manovich:
the elements on a syntagmatic dimension are related in *præsentia*, while the elements on a paradigmatic dimension are related in *absentia* [Manovich, 2001, p. 203]

In the case of a music score, for instance, individual notes are materially present on a piece of paper while the assumed paradigmatic sets from which they may be said to originate (e.g. some particular music scale or a set of equally valid chord alternatives) can be thought of as bounded to composer’s mind only. Manovich claims that in the world of new media this relationship is reversed in that the paradigm is given material existence—being an actual database stored in some physical medium—while the particular way it is temporarily or otherwise realised—i.e. the syntagm—is implicit and de-materialised. Of course, such a linguistics-inspired train of thought cannot fully account for the complexities and the reflexive nature of real-life artistic practice. While being fairly accurate in the case of well-defined languages and code, in other contexts, Barthes schema could be rightly denounced as a gross, and rather inaccurate, simplification. Art is not (necessarily) a language and linguistics-inspired schemata do not (necessarily) relate with actual artistic practice. Yet, however artificial such a syntagm-contra-paradigm opposition may be in an art context, it does shed some light on the particular compositional schemata that govern certain portfolio projects. Accordingly, I will follow this particular train of thought in order to better illustrate the methodological traits in those cases, and not because I believe in its universality.

In certain projects of my portfolio I follow a rather paradigmatic approach, in that they are primarily structured around some database of interchangeable elements, and in that they are characterised by a rather ‘loose’ temporal dimension. This is the case with most audio-based projects where I typically rely upon some database of replaceable audio recordings, or synthesis algorithms, to construct a particular syntagm in-situ—be it for a performance or for a fixed media work. In such cases it is typically of no particular interest whether a particular sound appears at a certain moment in time or several seconds—even minutes—later, or whether it appears at all. In other words, such projects materially exist as out-of-time databases that will acquire temporality only when they are presented to an audience, and with respect to the specifics of the interface(s) involved. Consider *Sygxysis*, for example, which is just a database of audio synthesis algorithms to be presented in no particular order. Or *Efterklang, SoundWalk @ Lake Vistonida, Passeggi Sonoro* and *In:Out*, which are all structured around the juxtaposition of material from corresponding audio databases, and in a way which may or may not be governed by some narrative. In the first two cases, a narrative will be most likely implied, if not accelerated; yet, one that would be situation-specific and not preformulated. The two latter cases are rather special in that they are characterised by well predefined
sequences of sonic events and, as such, may be said to be predominately syntagmatic. Nevertheless, their various sections are constructed by means of juxtaposing/layering elements in-situ; thence they are explicitly paradigmatic in their micro-structure. More importantly, the overall duration of each section is not strictly predefined; it, instead, adheres to the specifics of each occasion—i.e. to what I understand as the ‘right moment’ in some given context.

Manovich has discussed hyper-narratives, defined as the sum of the multiple trajectories through a database [Manovich, 2001, pp. 200-201] or, in my understanding, as the aggregate of all possible contingent combinations of all elements in a paradigm. Paradigmatic composition practices, suggest an out-of-time methodology; works only exist in a latent form, primarily as paradigms that have to be actualised by means of selecting or of constructing a certain eventuality amongst the numerous potential ones. Such an approach is fundamentally different than the traditional way to compose acoustic or electracoustic music in a time-line, which is syntagmatic in principle. In my practice and at least as far audio related works are concerned, narratives are almost exclusively understood as contingent and occasion-specific while databases are rather explicit—this is exemplified in all the aforementioned cases. In [Koutsomichalis, 2016] I account for numerous historical cases of paradigmatic composition in both popular, ‘experimental’ and classical music. It has to made explicit, however, that such practices, especially as far as the projects discussed are concerned, is a poetical affair. In neither of these cases do audiences encounter the actual paradigmatic sets that govern the creation of each project. Instead, they engage with contingent narratives that are temporarily delineated by subjective phenomenological experience.

5.2.3 Spatialisation

In section 3.4 on page 41 I briefly discussed spatial organisation, a theme that I will further address in this section. In particular, I will elaborate on the exact ways in which various materials are spatialised in the context of certain projects so that a narrative may be extended in the spatial domain, as well as how a particular ordering—a place, in the de Certeau terminology—is established in space. In A, for instance, a 17.4 dome-like configuration of speakers is mobilised: a single speaker at the top followed by a top rig of four speakers, a middle rig of eight and a bottom rig of additional four plus four subwoofers—the top and middle layers are partly visible in figure 2.3 on page 24. A, begins with a sparse stream of cracking sound grains that gradually becomes thicker and louder until it reaches a peak; then a gestural filter sweep follows. Sound is initially reproduced only by the top speaker and is slowly distributed to the rest this way surrounding the audience and gradually claiming more space and amplitude. Concurrently,
light performs a very slow fade-out from absolute red to total darkness. \( \mathbf{A} \) is essentially structured around the way space is physically embodied—as sound gradually claims more space and as red light gradually retreats, the audience is subjected to a rather ‘asphyxiating’ experience. Then, in the case of \textit{Anotropia} (or: \textit{do violinists dream of Fourier Transforms?}), a live audio stream from a violin is split into five channels to be processed differently and to result in a series of de-correlated signals that are subsequently performed over five loudspeakers. The same kinds of processes are more-or-less used for each of the five signals, yet the envelopes controlling the temporal evolution of the various synthesis parameters are all different, as are the impulse responses used for real-time convolution in each case. Those five signals are, then, different yet contextually coherent.

There are several other occasions where I route monophonic signals independently to the available speakers in order to make the overall work spatially heterogeneous. Consider e.g. \textit{Sygrys}, 12'02" (stereo) from \textit{The Buchla Project}—where the left and right channels are completely independent—or 14.7 #1: \textit{Thessaloniki}. Then, in performances of \textit{The Buchla Project} or \textit{Marinos Koutsomichalis \'e stato eliminato}, I often route monophonic audio to a single speaker, or I diffuse spectra in space (employing different equalisation curves for each speaker in monophonic or multichannel signals). In the case of \textit{Efterklang}, I follow a different approach: five sound generators are spatialised using two diagonally intersecting pairs of speakers. Three of those generators may be panned between the left-front and the right-back loudspeakers while the other two between the right-front and the left-back ones. Such a set-up allows me to move sounds in centrifugal
and/or centripetal ways. In:Out is probably the most sophisticated case. The project is highly modular and site-dependent. More than just being contextually different—see also section 5.2.1 on page 62—Å and Ø have been also assigned distinct spatial behaviours. Ø comprises of environmental audio encoded in the ambisonics b-format and are to be reproduced by some canonical multi-speaker configuration. For the project’s first incarnation in York I used a rig of 16 loudspeakers in periphonic configuration, and for its second in Rethymnon I used an horizontal-only set-up of eight bi-amplified studio monitors. Contrasting Ø, Å is to be performed by an arbitrary number of speakers and subwoofers which spatial distribution needs not be necessarily canonical. For the set-up in the A.S. Rymer Auditorium, I used five tri-amplified loudspeakers and a subwoofer (grey cubes in image 5.1 on the previous page), and for the Studio of Music Interaction and Polyphony version, I used two subwoofers, as well as six bi-amplified studio monitors positioned in a quad and a secondary stereo configuration (inner circle, triangle, and the two brown cubes in image 5.2 on the following page). From a strictly technical viewpoint, such a complicated set-up allows me to grant the two auditory streams specific acoustic topologies that would correspond to the particularities of each accommodating space. By means of controlling how speakers are positioned in space, how they stimulate the acoustics of each individual site and how sound is diffused amongst these speakers, it is possible to associate certain streams of audio with particular topologies and control their behaviour in space. The ways in which I would perform the work would be dependent on the site itself and on the particular speakers’ configuration and positioning I would adopt. The spatial configuration of the speakers has to be decided in response to each site’s particular acoustic and architectural idiosyncrasies and the entire spatialisation algorithm (especially Å’s part) has to be refactored in each case.

14.7 #1: Thessaloniki, Oiko-nomic Threads and DownTime: Post-domestic Fiction are examples of projects that involve spatialising physical objects. 14.7 #1: Thessaloniki, as already discussed in section 3.4 on page 41, constitutes an architectural presence which dictates the ways in which one may behave and function within the accommodating space. In the case of Oiko-nomic Threads, objects are positioned differently in the various incarnation of the work, but in all cases according to a broader narrative—the work has to resemble or give the impression of a workspace revolving around a knitting machine. DownTime: Post-domestic Fiction, on the other hand, lacks such flexibility; it rather calls for a fixed set-up. The work has been exhibited four times in four different kinds of spaces and in all cases it was set-up in the exactly the same way, which is largely inspired by the way in which electronic components are positioned in a circuit. The particular positioning of objects in this case imbues their being-in-a-system (see also section 5.4.2 on page 77). Just by looking at DownTime: Post-domestic Fiction it is

\footnote{For a technical background on ambisonics consider [Malham and Myatt, 1995]}
Figure 5.2: In:Out; Studio of Music Interaction and Polyphony set-up. The external circle indicates the pantaphonic ambisonics rig, the internal one the quad configuration and the blue triangle the secondary stereo rig. The two brown cubes behind the table indicate the subwoofers.

obvious that individual objects constitute nodes in a broader network, as they are visibly inter-connected with wires. Furthermore, and unlike the case of Oiko-nomic Threads where an object (a knitting machine) is central to the entire set-up both physically and conceptually, in DownTime: Post-domestic Fiction the proposed spatial configuration permeates a non-hierarchical scheme wherein no individual object is to be understood as relatively more important than the others. Such an explicit non-hierarchical scheme accounts for the fact that DownTime: Post-domestic Fiction is a proper interactive system, where no particular node is implicitly or explicitly favoured. A spatially broad and prominent set-up has been also attempted within the context of LLEAPP 13. Each artist has been assigned an area in space and a speaker—yet it would often occur that artists would move to different positions for brief or for longer periods of time and in fact it was quite common to change the angle of the speakers during performance. This way the participant artists have been spread around the entire space. In the final performance of the work, the audience was essentially surrounded by artists and speakers and allowed to wander freely amongst us.

5.3 Automata

Another common theme in my work is the use of automata. By ‘automaton’ I refer to (partly) self-regulating/autopoietic systems that govern some aspect of a work. Some of the most important automata I have used are described in the following subsections.
5.3.1 Visualisation and Machine-aided Interpretation

Both in the case of Sygxysis and of Oiko-nomic Threads visualisation algorithms are encountered, albeit for fundamentally different reasons. In the first case, as to be elaborated in section 5.4.3 on page 82, visualisation is meant to provide an alternative interface to the signal to be explored, while in the latter it is the means to re-contextualise data through machine interpretation. In Sygxysis’ case, the project has been conceived as an audiovisual performance wherein two independent computer-generated signals are projected both in audio and visual terms. Oiko-nomic Threads features a much more complex automaton which processes numerical financial data by means of a fixed database of patterns (binary raster graphics) inspired by Greek folk tradition; this results in complex generative imagery that is subsequently projected in a computer’s screen and knitted accordingly to produce a piece of textile. The algorithm relies on image processing techniques, a set of hard-coded rules and a minimalistic random number generator. A simplified version of the automaton may be described like this\textsuperscript{2}:

1. Retrieve next numerical entry.

2. Deterministically map each number to a corresponding pattern.

3. Stochastically decide the width of each pattern, so they all have different width and their total width is exactly 160 pixels.

\textsuperscript{2}Note that this is a simplified version of the automaton that does not include a series of complex operations and tasks related with file I/O operations and with hardware communication.
4. Scale patterns according to the desired width so that their proportions are kept intact.

5. Calculate a single line of dimensions 1x160 from the scaled patterns sequentially (taking the bottom row of each pattern and then moving to the next).

6. Move to the next row and proceed until the shortest (in length) scaled pattern is reached.

7. Repeat steps 1, 2, 3, 4.

8. Calculate a single line of dimensions 1x160 from the scaled patterns sequentially but this time also layer all the remaining rows of each scaled pattern left from previous iterations of the algorithm and using Boolean logical operations on the binary pixels.

9. Proceed until the process is terminated. If the database has finished repeat from scratch.

This way a continuous never-ending design is generated, which is subsequently visualised in the computer’s screen line by line—see image 5.3 on the preceding page. The idea here is that a simple stochastic operation (which is to be understood as an minimal element of intrinsic computer logic) will (through layering the remaining parts) result in infinite eventualities. This leads to all sorts of computer-generated designs that in their very essence are nothing but the machine’s own way to interpret the numerical data with respect to a fixed set of patterns. The proposed algorithm is therefore intended as a machine-oriented interpretation of the available dataset. In reality the automaton is even
more complex since it is non-deterministically biased by occasional glitches congenital to
the hardware used and to the human operator (who will most likely err at some point),
and also due to potential communication failures between the hardware and the software
involved.

5.3.2 Recursive, Feedback, & Stochastic Systems

In the case of *Oiko-nomic threads*, as already discussed in the previous subsection, a
simple stochastic number generator has been used as the means to introduce computer-
logic to a system. In other portfolio projects the call for stochastic and chaotic behaviour
is more explicit. *Sygyxsis*, for example, is based on a number of recursive and chaotic
waveform generators. In essence, the generators recursively iterate through complex
chaotic functions a given number of times so that the output of such functions control
their own parameters. A simplified version of the algorithm would be:

1. Define a number of stochastic audio and/or control signals based on parametrisable
chaotic functions and limit their output to a nominal range.

2. While the desired number of iterations is not met, redefine each of these signals as
a function of themselves where each of their parameters are modulated by properly
scaled clones of themselves.

3. Repeat the last step as many times as necessary.

4. Calculate the signal and advance it to the output.

This is a very simple and powerful algorithm, congenitally recursive, chaotic, unpre-
dictable and contingent. In a performance, it is impossible to control what the exact
output may be, even if there is some minimal control over a set of parameters, namely
the depth of recursion and the nominal frequency range within which the final oscillator
will produce audio. An iterative stochastic system has been also created for *Impulsion*. In
this case images are essentially feedback artefacts, since the original material to be
further processed contains no information. As already explained elsewhere, the project
is structured around stochastically generated chains of image processing units which
are then used to process a nominal white-coloured pixel. Images 2.8 on page 33, 2.9
on page 34, 3.8 on page 46, and 3.9 on page 47 demonstrate examples of such images.
Similar feedback systems, wherein the output of one module is fed back to its input,
either directly or after having passed through a number of other modules, have been
used extensively in *The Buchla Project*. In several patches, for instance, I would drive
the multiple outputs of a Buchla 296 spectral filter back into its inputs in order to cause
it to self-oscillate, and then I would pass the same signal to several other modules the output of which would back-propagate to prior stages of the processing stage, including that of the very first 296 filter. Concurrently, I would use other audio or control signal outputs to control the behaviour of all modules, creating subsidiary feedback loops.

*Bastard Noise* is structured around a hybrid feedback loop between a Buchla Modular system and a computer running SuperCollider code. The two systems would reciprocally exchange control and audio signals to each other so that a huge and hybrid feedback loop is created. Regarding audio, several channels of signals from the Buchla would be processed in SuperCollider (mostly using operations in the spectral domain and occasionally real-time convolution) and the audio output from the computer would be then fed back in to the modular system to be used as either control or audio signals. In SuperCollider, I would also use complex routines to send MIDI data to the Buchla’s 225e module to convert into CV so that it could be used accordingly as a control signal. Then I would also use machine listening algorithms in SuperCollider to extract data from the Buchla’s audio generators and use them to control parameters within SuperCollider. I would explicitly interact in both ends of the system, either through tweaking the various Buchla modules and live-patching them in different ways, as well as in SuperCollider (mostly through live-coding).

The projection of computer graphics and sound in *Subception* is also governed by a partly stochastic automaton. Here, the algorithm irregularly spawns audio by means of a complex synthesis module that combines both deterministic and stochastic oscillators. The algorithm may select a random set of frequencies from three fixed ranges with respect to the acoustic characteristics of the given accommodating space and at random time intervals, again within certain ranges. The projection part consists of different elements including colour textures, rapid successions of vertical and horizontal lines, stroboscopic effects and others. All these elements may or may not appear at a given time following algorithmic instructions and simple probabilistic patterns that are responsible for contingent behaviour. The rate at which changes occur as well as the number of simultaneous events is largely asynchronous to the audio, but still the algorithm will occasionally synchronise audio and video. The audio part interacts with the graphics part, yet not in a straightforward way. Some parts in the computer generated graphics are self-governed and others occur in sync with the audio part. Essentially, the algorithm is meant to moderate audio and visual elements so that they are sometimes in and sometimes out of sync.
5.3.3 Reaction and Interaction

*DownTime:*Post-domestic Fiction, *Schizoid Cityscapes* and *17.4 #1: Thessaloniki* are reactive works in that they require the audience to engage physically with them and to perform some kind of action so that they unfold themselves as artworks. The case of *17.4 #1: Thessaloniki* is rather straightforward: the user is expected to position loudspeakers on top of sound generating columns for sound to be reproduced. The audience may, thus, construct—either in solitude or in larger groups—a sonic-structure of some sort in space.

In *DownTime:*Post-domestic Fiction, the audience is invited to perform a series of object-dependent physical actions such as touching the keys of a clavier, taking a photograph with an analogue camera, dialling a number on an analogue phone, pushing buttons, rotating knobs and even using a sphygmomanometer to measure one’s arterial pressure. Hidden somewhere off view is a micro-controller responsible for tracking down the users’ interactions and sending the corresponding data to the computer which will encode them and map them to the parameters of a very complex sound-synthesis generator. Embedded in the very nature of the sound-synthesis module is the ability to spawn complex networks of interactions between the various objects. That is to say that the outcome of a certain action depends to some extent on the current state of the other objects—this is not hard-coded in the algorithm but is a property emerging out of the very nature of the sound-synthesis module, which over the four incarnations of the work changed significantly towards either end: a perfectly integrated network of interactions which would, nevertheless, be less responsive since a user would not be able to map a physical action to a predefined result or a perfectly responsive situation wherein each object would have a finite and understandable behaviour.

*Schizoid Cityscapes* apparently requires the audience to perform physical actions, although of a very different kind. The work invites the audience to use a portable audio player apparatus and a pair of headphones, while strolling a certain part of the city that accommodates the work. In the cases of *DownTime:*Post-domestic Fiction and *17.4 #1: Thessaloniki* the audience is provided with an interface which is minimal, functional and immersive; audiences are given little instructions so that they may explore the works themselves reactively. However, in the case of *Schizoid Cityscapes* audiences confront a vast terrain—an entire city—where the ways to react are infinite. More, it is impossible for one to figure out what would be the most efficient (with regard to the work’s objectives) way to move and react. Thereby, a certain walking route is suggested—see image 4.1 on page 51—for the occasion of the premiere of the work in Athens. While great effort has been made so that certain sounds occur within certain parts of the proposed route, precision is impossible in a work like this. Nevertheless, the map does further a more focused way of action and does address a series of practical problems,
such as e.g. how to cross a high-traffic avenue which is noisy enough to obfuscate the overall listening experience, traversable only from certain spots and potentially dangerous if crossed while listening to disorientating material through one’s headphones. Schizoid Cityscapes also opens up the need to cater for individual needs. For example, for certain audiences walking approximately three kilometres is neither easy nor always possible—be it for mobility-related disabilities or for a tight time-schedule. Accordingly, approximately one third of the proposed route is a circular path that starts from the exhibition and returns very close to it, so that one may easily return there if he or she does not want to proceed.

5.4 Exploration

Exploration of physical or abstract materials is also a recurrent theme within my practice theme, as to be discussed herein.

5.4.1 Interrogating the ‘in-itself’

Several projects revolve around a systematic material interrogation of physical or abstract qualia in order to unveil hidden traits: in other words to explore the ‘in-itself’ rather than the ‘for-me’ of those materials. This is a rather non-existential, non-hermeneutical, and non-phenomenological approach, in that it does not commence from some correlate of thought about an object—at least not primarily—nor does it account for any kind of intentionality other than my will to explore an object in-itself. Exploration in this case is collapsed into an all-inclusive interrogation, not against some prescribed understanding of a certain something, but founded on the very idea that this certain something may be ineligible and inaccessible to me. For example, in the cases of the The Buchla Project and Marinos Koutsomichalis è stato eliminato, I have attempted such an all-inclusive interrogation by means of trying out all sorts of (im)possible and uncanny combinations—much like Russian constructivist Alexander Rodchenko who would take photographs of his subjects from all sorts of weird angles. Such a practice may be also paralleled with what physicist and sociologist Andrew Pickering refers to as ‘mangle’—the cyclic process of a human prodding and probing some object in order to answer some question [Pickering, 2010]. Pickering argues that objects typically ‘resist’ human inquiry and this way force the questions to be appropriated and modified so that new forms of resistance are uncovered. It is exactly upon such an object’s resistance that I may access some of the hidden facets of an object; as Katherine Hayles puts it:
Resistance is crucial because, although objects cannot tell us what they are, they can tell us what they are not [Hayles, 2014, p. 169]

Indeed, when interrogating modular synthesizers it is the instruments’ resistance to my ‘questions’—in this context, patching, modulation, interaction—that leads me to develop new strategies of interrogation. Here, resistance is to be understood as the instrument’s tendency to settle at already known or otherwise uninteresting (for me) sounds. In these two particular cases I tried out all sorts of configurations, including highly complex ones, structured around several recursive or mutually reciprocal feedback loops, or around extreme cross-modulation where all sorts of signals would modulate others interchangeably. I also attempted totally random and conundrum configurations, where I was acting as if I had no idea of modular synthesis. I would even purposely begin with erroneous interconnections that would introduce all sorts of noises, glitches and normally undesired artefacts to a patch—e.g. using control signals as audio sources has been a very common tactic. I also used transducers such as induction coils, contact and open-air microphones to record the physical operation of the machine; occasionally I would even feed such sounds back inside a patch. Then, I would change tactics in terms of my own interaction with the instruments. Sometimes I would merely leave the instrument to perform alone for several minutes, yet in other cases I would improvise with it in terms of tweaking the various parameters and the cable connections either randomly or following pre-defined formulas. Sometimes I would follow intuition while other times I would attempt rather restrained approaches by means of dedicating certain time intervals to examine how a particular set of connections or parameters affect the sonic gestalt. Linearity has not been necessarily avoided, but I would also behave totally irrationally on given cases.

Of course, in neither The Buchla Project nor Marinos Koutsomichalis é stato eliminato have I been interested in exploring a synthesiser outside of its being an instrument—its being ‘ready-to-hand’ using Heideggerian terminology [Heidegger, 2010, pp. 62–66]. I was rather interested in exploring them within this context, yet in a way that I could access all those sounds that are inaccessible to a normative—in any kind of way—approach. Hayles argues that objects do not passively present their qualities but that it is rather upon humans to actively attend them and always ‘within certain contexts and for motivated reasons’ [Hayles, 2014, pp. 172–173]. Accordingly, from my point of view and with respect to poetics, material interrogation is to be understood as explicitly context-specific. Consequently, and with respect to different contexts and materials, I have attempted various other interrogation methodologies. In the cases of Impulsion and Sygrysis, for instance, I rather relied on automata and abstract mathematical formulas, as already discussed in section 5.3.2 on page 72. In this cases, material resistance was
identified as a tendency to produce identical and sometimes inaudible/invisible sounds/image and, accordingly, the proposed algorithms modify ways in which the initial questions (a white-coloured pixel and chaotic functions, respectively) are posed (sequentially chained image processing units and recursive iterations through chaotic synthesis oscillators, respectively) to account for such resistance. In *Efterklang* I interrogated the machine in the most literal way: I ‘questioned’ all the factory presets of a digital reverb unit by means of a nominal 0bdfs valued audio impulse and subsequently recorded all of its possible answers. In this case, however, I did not encounter significant material resistance—the machine would respond all my questions in a well predefined way.

### 5.4.2 Hacking, Re-appropriating & Being-in-a-system

Hacking and tinkering methodologies are encountered in two projects in my portfolio, namely *DownTime: Post-domestic Fiction* and *Oikonomic Threads*. In the first case, the miscellaneous appliances and objects used have been tinkered with so that they could send data (analogue voltages) to a computer (running custom software) and through a micro-controller that would convert analogue signals to digital ones. This involved installing additional sensors (some of which have been custom-made) or appropriating existing electronic components such as potentiometers of knobs—image 5.5 demonstrates several hacked objects interconnected to a micro-controller. A detailed description of the various hacks follows:
**Hand-mixer:** a piezo-electric element has been attached to its base.

**Electric harmonium:** a custom pressure-sensitive variable resistor has been installed below the keys so that the unit transmits an electrical signal of variable voltage every time a key is pressed.

**Spectrum computer:** two layers of aluminium foil separated by pieces of sponge have replaced all the original electronics so that when any button is pressed a circuitry is closed and current is sent to the micro-controller.

**Ionalyzer:** the unit’s three potentiometers have been rewired accordingly so that variable current is sent directly to the micro-controller.

**Telephone’s handset:** the built-in speaker is directly connected with an amplifier in order to reproduce given audio.

**Telephone rotary switch:** the rotary switch is directly connected to the micro-controller so that it sends on/off pulse signals every time it is used.

**Telephone bell:** using a relay, relevant circuitry and a 15V AC power source the micro-controller may control when the bell rings.

**Photo-camera:** a photo-resistor with the relevant circuitry has been installed in its dark-chamber (where the film normally is).

**Atari 2600:** the unit’s switches have been rewired in order to send current to the micro-controller.

**TV:** audio signal is directly sent into its video input.

**Hair dryer:** it is positioned against an analogue thermistor that converts changes in temperature to voltage.

**Small fan:** it is controlled by the micro-controlled with the help of a relay, relevant circuitry and a +12V DC power source.

**Sphygmomanometer:** a custom pressure sensor created with sponge and conductive fabric has been installed within the instrument.

Whenever applicable, the units are also connected to a common +5V DC power source and a common ground circuitry.

On its behalf, *Oikonomic Threads* has been structured around a ‘hacked’ knitting machine, the ‘brain’ of which has been replaced with an Arduino micro-controller and additional circuitry, so that it is possible to move mechanical parts that control the movement
of the needles with serial messages—images 5.6 and 5.7 on the next page demonstrate this custom ‘brain’ in its development and in its final stages, respectively. Additionally, hall-effect and IR sensors have been also installed so that the micro-controller may calculate the exact position of the carriage (the piece of equipment used to stitch). This piece of information is used to regulate the position of 16 built-in solenoids that in turn control the position of the knitting needles in groups of 16. In order for a single line of fabric to be knitted, the ‘brain’ has to first process the relevant imagery data arriving from the computer via serial communication—160 binary numbers, each representing the thread selection (background or foreground colour) for each stitch—so that it caters for various hardware-specific idiosyncrasies specific to this particular machine, and then it has to iterate through these data using the position of the carriage as an index, so that at any given time the position of the 16 needles adjacent to the latter is correct.

In the case of *DownTime: Post-domestic Fiction*, through hacking and tinkering, the original functionality and purpose of existence of these appliances has been radically transmuted. These objects now become modulators of a broader interactive system where they are attributed a new kind of functionality, and as a matter of fact a new kind of associated dysfunctionality, since the entire system has been designed to be unstable. Nevertheless, appliances and tools remain charged with the history of their operation and of their intended actions—see also [Heidegger, 2010, pp. 62–66]. Accordingly, *DownTime: Post-domestic Fiction* relies on the tension created by the memory of the appliances’ original operations that contrast their new functionality as well as their sometimes ambiguous or unexpected behaviour within the broader system. This way the
audience is engaged into a constant game of known/unknown, expected/unexpected and controllable/uncontrollable relationships that are forged between the various appliances and the audio output—a certain kind of game that becomes ever more unpredictable when more individuals join it. In Jussi Parikka’s words:

\[
\text{dysfunctionality is articulated as a temporal relation and the whole installation acts as an anthropological operator for cultural techniques of temporality}^3.\]

*Oiko-nomic Threads* is to be also understood as a system of interactions between various appliances and pieces of software; yet, and unlike *DownTime: Post-domestic Fiction*, the memory of operation of the various nodes is not only kept intact but it is also accentuated through explicit references. *Oiko-nomic Threads* conjures different incarnations of the very same technology into a paradox mix of hi-tech and antiquated machinery to explore the different notions of labour associated with each, as well as the ways in which they may team up to produce something innovative. Indeed, the computers as well as the domestic knitting machine are evolutions of the loom [Essinger, 2004], which in *Oiko-nomic Threads* is referenced by the use of various Greek folk motifs, representative of what would be knitted at the loom’s heydays. ‘Loom-driven’ technology in its various incarnations (industrial loom, domestic knitting machines, computer) has been the key motor in advancing different kinds of social and economical organisation for the last couple of centuries. The loom has been paramount for domestic economy in the 18th

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3[http://jussiparikka.net/2012/11/19/downtime/], accessed November 10, 2014
century—e.g., in Greece woven textiles have been traditionally associated with wealth. The industrial loom has, then, been the key motor of the industrial revolution much in the same way that contemporary computers did advance and standardise the so-called information era throughout all contemporary advanced societies. Then, domestic knitting machines such as the one we used in *Oiko-nomic Threads* have been very popular in the 1980s when a broader DIY movement re-popularised domestic based economy [Lankshear and Knobel, 2010]. In their various incarnations, loom-driven technologies always required one or more operators and therefore are all associated with some certain kind of physical labour—one that correlates the standards of the societies they themselves have defined to a greater or lesser extent. However different the work of such an operator may be in each case, the very essence of operating a loom, or its successor technologies, is based on some sort of programming process: a loom has to be manually programmed so that a particular design may be generated, a domestic knitting machine has to be also programmed (either by means of recalling some factory preset from the appliance’s memory or somehow applying one’s own designs), too, and the operation of a computer relies on software which in turns relies on some programming language. This is not surprising if one considers that in its very essence knitting has always been a ‘digital’ process; it encodes information as discrete signals of some sort. Consider for example a basic loom/knitting machine where the stitches may have the colour of either thread A or thread B. As a matter of fact a stitch is just the equivalent of a pixel or of a digit in contemporary computer science. In other words, the relationships between the various incarnations of the loom are neither superficial nor simply historical but also exemplificatory of a more profound shift towards the ‘digitisation’ of information as well as towards a new paradigm of labour—one based on the programming-operating dipole.

Under these premises, *Oiko-nomic Threads* is not simply about bringing together different incarnations of the same technology, but about fuelling a broader discourse on their repercussions as well as about relevant, albeit different, paradigms of social and economical organisation. The use of financial data in the context of the project completes a conceptual epicycle since they are the means to ‘measure’ wealth and labour these days, much like woven textiles which used to be a similar measure in past times (at least in Greece). Then, the presence of an actual human operator as well as of an explicitly prominent algorithmic procedure, are to be understood as the point of convergence between the different kinds of technology around which the project revolves. Still, it has to be highlighted that the project’s constituents are integrated in material and not merely in conceptual terms. *Oiko-nomic Threads* is not a conceptual abstraction but an actual operable and functional system that does fabricate real textiles with qualities that echo the various connotations and symbolical references of the integrated technology. This way the project suggests a new kind of technology that pragmatically materialises the
aforementioned concerns and is not limited in some vague intellectual statement; it aspires to demonstrate that by means of bringing together different kinds of technologies into a synergetic symbiosis, so that they are cast accessible and contemporary.

5.4.3 Technological Mediation

In Anotropia (or: do violinists dream of Fourier transforms?) exploration is attempted through technological mediation—a strategy not alien to traditional compositional practices. As a matter of fact and as far as most kinds of music are concerned, musical instruments may be understood as the technological means to mediate some music score, or some otherwise abstracted musical content. In Marc Leman’s words:

> Playing a musical instrument is an interactive activity, and the musical instrument can be seen as the technology which mediates between human mind (musical ideas) and physical energy (music as sound) [Leman, 2008, p. 138]

With Anotropia (or: do violinists dream of Fourier transforms?) I intend to mediate the instrument and the instrumentalist themselves, rather than to cast them expedient to some pre-existent compositional tactic. Employing a computer, a microphone, five loudspeakers and an algorithm that governs the flow of information between the various nodes, a violin(ist) is accessed and interrogated and eventually has its material aspects exposed in acoustic and symbolical terms. A performance of the work calls for a quasi-theatrical set-up where the computer (ideally some laptop) is to be positioned on top of some kind of stand and in a way so that it draws at least as much attention as the violinist does; this way a somewhat dialectic opposition between the violin(ist) and the technology to mediate it is made explicit. The violin(ist) is then supposed to perform a music score (which on its own behalf asks for an exploration of non-standard timbres, as already discussed in section 4.2.3 on page 52) while the computer processes the sonic output (mainly through spectral transformations). The various processing parameters are modulated over time according to a largely deterministic hard-coded algorithm and, hence, it is imperative that the violinist is always in sync with the computer algorithm; this is guaranteed through a secondary screen (positioned somewhere off the audience’s view) which projects auxiliary visual aids such as a clock timer, a metronome and various useful verbal instructions.

Such a case of explicit technological mediation is to be understood as a complex ecosystem where interdependencies are forged between what is mediated and the means to do so—in this case in both acoustical and symbolical respects. Indeed, media technologies are always constituents of such broader networks and, more importantly, it is the
re-construction of such networks that may cast a medium or a technology as essentially new. According to Bolter and Grusin:

[...] media technologies constitute networks of hybrids that can be expressed in physical, social, aesthetic, and economic terms. Introducing a new media technology does not mean simply inventing new hardware and software, but rather fashioning (or refashioning) such a network [Bolter and Grusin, 2000, p. 19]

For Merleau-Ponty, too, objects and technologies are entangled to their use and are, therefore, always habitualised [Merleau-Ponty, 2013, pp. 98–147]. In our case, that is to say that both violinists and non-violinists already have some (pre-)cognitive understanding of what a violin is and how it may be used. Therefore, the violin as a technology to mediate music always carries cultural signification: the violin is not merely an ‘object’ but a ‘musical instrument’ already charged semantically by the history of its operation and by the various cultural and social connotations it carries (which are especially sound in the western world in the case of a violin). Employing Heideggerian terminology, the violin may be said to be ‘ready-to-hand’ rather than ‘present-at-hand’ [Heidegger, 2010, pp. 62–66]. It is exactly such culturally constituted significations and their resulting acoustical tokens that Anotropia (or: do violinists dream of Fourier transforms?) seeks to explore by virtue of refashioning the broader frame of reference, so that it is no longer possible to habitualise the violin. In this context ‘refashioning’ is not to be understood as a by-all-means deconstruction, but, instead, as a milder modulation of the contextual relationships between the violin(ist) and the technology to mediate it. Of course, links to the original habitualised schemata are unavoidable; they are, nevertheless necessary so that a dialectic opposition with present technology may come to the fore. Throughout a performance, the essential material characteristics of the violin(its) (its characteristic timbre, the typical way to perform it, its frequency register, etcetera) are distorted, transmuted, and questioned acoustically, while also being foregrounded by an almost theatrical configuration which brackets the violin(ist) out of its ordinary frame of reference (its being the mediator to music rather than what is mediated).

5.4.4 Multi-modal projection

It has been already discussed that certain interfaces synchronously bring together different kinds of media in synergetic hybrids. Certain projects have been also shown to asynchronously spawn a number of artefacts across disparate media. In the case of Sygrysis, for instance, I attempt a synchronous projection of the very same material
constituents across different media to this way actuate different perceptional modalities: visually, through waveform projection; auditory, through normal auditory cortex related listening; and haptic-ly, given that sound is also a physical force that when loud enough may be also felt in various internal and external parts of the body. Across those modalities certain qualities of the signal in question, that may be difficult, if not impossible, to perceive otherwise, are cast accessible. The idiosyncratic geometrical shape of certain waveforms, for instance, can be only appreciated visually, while certain other signals that manifest near or beyond the lower boundary of our auditory perception are to be better perceived haptically, given that they are quasi-inaudible and since their wave cycles are too wide to be efficiently visualised. Of course these are the most naive and straightforward examples; there are numerous qualities in a signal that a synchronous multi-modal projection will reveal and accentuate accordingly (although in most cases it is difficult to accurately quantify them). More, a whole series of perceptual phenomena relevant to cross-interactions and inter-dependencies between various sensory modalities are this way actuated.

During a performance the output of the oscillators is simultaneously listened to, watched and bodily felt, to occasionally result in a quasi synaesthetic experience. However, synaesthesia is not the objective herein, and while a synchronous multi-modal embodiment of some signal does further a more inclusive kind of perceptual engagement, it simultaneously obfuscates the full potential of individual projections. Consider that just audio in a dark room is a very different, and a potentially more intense, experience than audio within an audiovisual context. That is to say that the whole may prove less than its individual parts, in the context of Sygxysis. Accordingly, I decided to occasionally blacken the flow of stimuli for the various modalities, so that individual projections across different modalities are encountered both alone and synergistically in order for a truly multidimensional engagement with the work to be advanced. In practical terms, during a performance the overall amplitude will significantly fall from time to time to allow for a less physically demanding encounter with sound, the visual projection will be occasionally completely muted to cultivate a shift towards the sonic qualities of a waveform, and the audio might sometimes move to quasi-inaudible infrasonic frequency ranges to emphasise the haptic characteristics of sound. However, I avoid completely muting the audio track since a waveform projection on its own cannot cast an environment intense, which as already mentioned in section 2.4 on page 20 turned out to be the æsthetical axis around which Sygxysis’ performances revolve. It is nonetheless partly through such an explicit multi-sensory bewilderment and exasperation that Sygxysis aspires to, and typically does, cause some kind of intense psychological impact.
Chapter 6

Conclusion

6.1 Introduction

Having elaborated upon my overall practice and upon the submitted portfolio of works, it is time to overview my findings, revisit the original research questions, point out possible future research directions, and, eventually, conclude with some brave propositions.

6.2 Key concepts

Before revisiting my original research questions, I will briefly underline a number of key concepts that have been shown to perturb my practice altogether.

**Hypermediacy** the tendency to keep media, materials and methodologies interchangeable, heterogenous, opaque and explicit.

**Research** the process of trying out new kinds of media/materials/methodologies and of bringing them together into broader production hybrids—projects emerge from successful experiments of such kind.

**Project-based** the formal logic to art-making which draws upon, and revolves around, the actual specifics of production; the point of reference is not some artwork, but the establishment of a broader production hybrid which will eventually resolve into one or more artefacts/events.

**Hybrid** a complex, dynamic, and reflexive (the artist is him/herself part of it) network of interactions and interdependencies between all sorts of integrals, including various materials, interfaces, methodological traits, individuals, etcetera.
**Materialism** the will to interrogate, to explore and to eventually foreground a hybrid, its integrals, and their inter-/intra-relationships.

**Multi-perspectivism** the principle according to which multiple insights to a hybrid, from many different perspectives are offered; a bold multi-perspectivism is accelerated in my practice, in that projects are often interfaced in a variety of ways to result in a series of unique artworks.

**Collision** the situation enacted whenever disparate/incompatible material/methodological treaties, or interfaces are juxtaposed or layered, this way either exposing their materiality, or forging complex hybrids at their intersection.

### 6.3 Research findings and future research

Bearing these concepts in mind, it is time to revisit the original research questions.

1. How may hypermediacy be promoted in the various stages involved in creating and presenting art?

As demonstrated throughout the written part of this thesis, as well as in the actual portfolio, hypermediacy is echoed in my practice at all levels of organisation. Considering my overall approach, a plethora of heterogeneous materials, methodologies and interfaces are encountered. Each of the portfolio projects has been centred around a different production hybrid, so that my overall practice is eventually foregrounded as separate from the media and the materials it revolves around. As already suggested, hypermediacy at this level can only be advanced by means of a conscious geographical, contextual and institutional diversity. The importance of my various collaborations has to be highlighted herein, since they have been shown to introduce important shifts to the way I work—a promising field for future research would be, then, to examine collaborative, D.I.W.O., and otherwise socially engaging artistic practices, in a series of different contexts to this way zero in the anthropological ramifications of a hypermedia approach. On their respect, projects have been typically given flesh out of successful experimentations with particular media, methodologies, materials and people; then, each project essentially constitutes a reflexive ecosystem, the integrals of which are to be typically foregrounded, exposed and interrogated in various ways and by means of one another. As already shown, a hypermedia attitude can be furthered at this level by means of introducing new kinds of materials/interfaces to existent hybrids; note that, in this context, to refashion a project with respect to the specifics of some particular exhibition/performance opportunity is to be understood as a new interface. Finally, a
hypermedia approach suggests that each particular constituent is to be kept opaque and explicit, this way exposing its very own materiality/making. Thence, to promote hypermediacy at the level of some individual integral, it is necessary to allow for all kinds of characteristic artefacts, glitches, erratic behaviours, and, in general, for whatever qualities emphasise the very making/being of the latter—I have already discussed a number of relevant examples throughout this thesis.

All in all, my practice (as articulated in the submitted portfolio) seems to account for a particular schema where the systematic renovation of materials keeps pace with their methodical revisiting. I argue that hypermediacy can be most effectively advanced in such a fashion, which can be envisioned as a rhizome in perpetual motion: ever-expanding towards new territories and ever-returning back to known grounds (which are, of course, no longer the same). As Kittler has pointed out, each time a new element is introduced to such a hybrid, the meaning and form of existent media will be transfigured and shifted accordingly [Kittler, 1992]. This relates to the next question.

2. In what ways may the various material and methodological constituents, as well as the various media involved in the production of an artwork be juxtaposed, interrogated and eventually foregrounded?

As theoretically articulated herein and as pragmatically demonstrated in the portfolio, materials, methodologies and interfaces can only be foregrounded in terms of another, and in terms of own substrates. Production hybrids are complex reflexive ecosystems that cannot be collapsed to their parts alone; instead, they are sustained by subtle and rather complex networks of interactions, interdependencies and intra-relationships between one another. Each time a new integral is introduced, a certain kind of ‘tension’ is generated between the former and any pre-existent constituent so that the balance of the entire ecosystem is this way shifted. However, it is impossible to synchronously foreground all involved elements, to exhibit all their possible contingencies, and to account for all kinds of tensions forged between the various ends. On this respect, applying an interface is to establish a new point of convergence and to position oneself somewhere within such a hybrid. Complex, recurrent, or distributed interfaces, that comprise media ecosystems themselves, may result in more than one point of convergence, and may even delineate motion trajectories between them. This way audiences are enabled to be-within a hybrid rather than to passively survey it. Throughout the written part of this thesis (especially in chapter 5 on page 62), as well as in the actual portfolio (in particular in the included performance-related) I have demonstrated how hybrids may be established from individual integrals. Interfaces do have an added responsibility in such a schema, in that any kind of ‘foregrounding’ has to be necessarily addressed by an
interface. While this is already addressed in this thesis, I believe that there is still ample space for relevant research: drawing upon contemporary techno-scientific reality, it is possible to experiment with more sophisticated, uncanny and hybrid interfaces. Again, of interest is the exploration of the D.I.W.O./workshop paradigm as a kind of meta-interface that would transcend the specifics of some artefact or some spatiotemporally bounded event. Such practices have been already well accounted for, yet not necessarily within a hypermedia context—consider e.g. [Jo et al., 2013, Kuznetsov and Paulos, 2010, Richards, 2013].

3. How may a project-based and site-responsive approach to art-making be established and how it may evolve with respect to the introduction of new kinds of media, materials and/or methodologies?

The submitted portfolio is a very pragmatic response to this question, since it demonstrates how my broader practice, as well as how individual projects, have evolved with respect to different exhibition/performance opportunities. As already discussed, essential to such a vein is a systematic renovation of materials, as well as their methodical revisiting. New performance/exhibition opportunities, new sites, new situations/occasions are nothing but new material treaties introduced to an existent production hybrid—materials which, as already examined, modulate the tension between existent integrals. A project’s lifetime exhibits rhizomatic behaviour: new kinds of attributes trigger new phases of research and experimentation, which will most likely introduce result in new collaborations, new ideas, new methodologies and additional interfaces. Having realised almost 20 projects under these premises, it seems that the most successful are the ones where I did unconditionally follow new strands, whatever they may have suggested. Accordingly, I tend to believe that the answer to this question is to follow the rhizome: accept and work with whatever new integrals emerge out of one’s practice. Of course, such an answer leads to all sorts of context-dependent questions that have to be pragmatically addressed, as already demonstrated in several cases throughout this thesis.

4. In what ways an artistic project, or an overall artistic practice, may be synchronously or a-synchronously projected across a wide range of media?

As far as a broader artistic practice is concerned, this is well exhibited in the submitted portfolio: each project to a greater or lesser extent revolves around different media hybrids. As far as projects are concerned, I have already elaborated upon cases centred around a synchronous (e.g. Sygxysis, e.g. Subception) or asynchronous (e.g. Impulsion,
The Buchla Project) multi-media projection. There have been various manifestations of multi-perspectivism throughout my practice which is typically escorted by and resolved to the (simultaneous) application of alternative interfaces. Consider that in certain cases artefacts have emerged unintentionally after the inception of some project (e.g. knitted textiles in Oiko-nomic Threads, painting in Impulsion) and that in certain others I have zeroed in on ways in which the very same materials actualise different sensory modalities (Sygzyysis), or how different methodological traits can be applied to the very same integrals (The Buchla Project). Notwithstanding, this particular area can be further explored. An interesting research direction would be those particular modes of non-phenomenologically driven material-interrogation that are rather based on extrapolation and speculation—consider for instance Hayles’ Object Oriented Inquiry schema [Hayles, 2014]. Research into this direction prerequisites the development of interfaces that would enable humans to peer at the results of such inquiries. Another possible research direction would be to explore how the later trends in data science and machine learning may provide sophisticated interfaces according to which abstract data can be (a)synchronously projected across a series of sensory/cerebral modalities.

6.4 Art as a post-philosophical/post-scientific milieu

I argue that a hypermedia and unconditionally materialistic artistic practice, such as the one accounted for throughout this thesis, may eventually suggest a particular post-philosophical and post-scientific way to engage with the world. Throughout this thesis I have demonstrated how my practice zeroes in on materiality, mediation, agency, effect and affect in all sorts of different contexts, this way enacting production hybrids that pose questions, and spawning artworks that constitute context-dependent responses to the former. Such an approach has important epistemological overtones in that it suggests a practice-based and material-driven research approach which often transcends theories and classifications, and which may offer a non-scientific/non-philosophical kind of ‘knowledge’ about its constituents. Such a knowledge tends to be embodied, distributed, subjective and always bound to certain social or other contexts.

Scientists have been traditionally unaware of the epistemological complexities and the dogmas of their practice; their methods and apparatuses often promise ‘objectivity’ of some sort while, in fact, they rely on particular methodological traits that come with their own limitations and constancies [Feyerabend, 1993]. Despite the inevitable epistemological shifts advanced by various theories throughout the entire 20th century (e.g. the uncertainty principle, the theory of relativity, quantum mechanics) or by the
gradual transition to the big-data driven eScience paradigm [Jagadish et al., 2014, Kitchin, 2014], science more often than not revolves around a particular kind of knowledge which can be discursively communicated, theorised, computed, and eventually collapsed in more or less quantifiable ‘facts’. On the other hand, philosophical reasoning often presupposes linguistic self-sufficiency, which cannot be assumed since Derrida and, especially, Wittgenstein [Derrida, 2013, Wittgenstein et al., 2010]. Thence, both science and philosophy are bounded to the limitation of the sign-systems within which they operate. However, neither concepts and abstractions nor disembodied measurements and informational patterns are the actual ‘things’ they are supposed to represent. ‘Reality’ cannot be collapsed to any language, so that while certain trains of thought and while particular methodological traits may be accurate within the confines of a given sign system, they do not necessarily account for reality—whatever this notion may stand for. More, as Brassier has pointed out, reality ought not be necessarily comprehensible nor human-oriented in any respect [Brassier, 2011]. In such a vein, speculative realists have suggested that philosophy zeroes in on the ‘real’ again which can be approached through speculations—Meillassoux has even proposed that such a philosophy should draw upon scientific findings [Meillassoux, 2010]. However, as long as philosophy is driven by language (or science), it will always be bound to the limitations of the latter; the various speculative realisms do not really transcend language and ‘reasoning’, in my opinion.

Instead, a practice such as the one accounted for in this thesis, cannot be collapsed into some sign system. Throughout my portfolio, objects and media are not dealt with discursively nor as if being abstract concepts. Instead, they are understood and dealt with in strict material terms; they are brought together in broader production hybrids, each of which revolves around a set of ‘questions’ so that projects eventually embody broader ontological (and potentially epistemological) inquiries. Within such hybrids, objects have been shown not to collapse into some particular behaviour; instead, they are, to a greater or lesser extent, allowed to expose their materiality which is foregrounded in all sorts of possible ways and with respect to those ‘tensions’ forged between their own integrals and the rest constituents with which they are interconnected. Unlike science, my practice does not zero in on facts and does not intend applicable, quantifiable knowledge; unlike philosophy, it does not rely upon some more or less specialised language, and it does not resolve in discursively communicated propositions. Projects are dynamic networks that embody questions of material, mediation, agency, affect and effect. Interfaces, then, actualise and articulate such questions, so that audiences of non-experts may engage with them and may be offered situation-bound insights to the former. The kind of ‘knowledge’ achieved is not discursive, absolute, universal, applicable or certain—such kinds of knowledge are better articulated by science or philosophy. Nevertheless, and
as to be corroborated in the submitted portfolio, my practice effectively articulates ontological uncertainty, indeterminacy, space/time relativity, perceptual hiatus, tension and collision, from both a poetic and an aesthetic point of view. This way a practice such as the one described in this thesis suggests a particular kind of reflexive and hands-on meta-philosophical/meta-scientific reasoning which transcends the limitations of discursive thinking.

The eventual conclusion of this thesis is my actual artistic practice, as documented in the submitted portfolio; there, I demonstrate how materials can be brought together in broader production hybrids so that, from a poetical point of view, cognition and consciousness is distributed among them—echoing Malafouris [Malafouris, 2013]—and so that a series of questions may be actualised and to a certain extent embodied. I, then, argue that my artistic practice suggests a post-philosophical and post-scientific way to think about the world beyond the inevitable clash of ‘theories about materials’ and ‘materials’ themselves. Art can be an experimental laboratory for philosophy, where perception, agency, representation, mediation, space, time, memory, material, language, cognition and consciousness can be themselves ‘researched-through-design’. Art can be a medium for presenting the fleeting, the uncertain, the indeterminate, the non-sensuous and the non-existent, as well as a site for the exploration of alternative methodological traits and of sophisticated interfaces so that new epistemologies may emerge. All in all, art can bridge philosophy, science, technology and life.
Bibliography


References


References


## List of Artists/Artworks

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List of Referenced Artists/Artworks

Iancu Dumitrescu 1944–
Ollafur Elliason 1967–
The Weather Project 2003–4
Riverbed 2014

Holis Frampton 1936–84
Steven Feld 1949–
Mark Fell 1966–
Peter Greenaway 1942–

100 objects to represent the world 1992

Gerald Grisey 1946–98
Hans Haacke 1936–
Florian Hecker 1975–
Eva Hesse 1936–70
Dick Higgins 1938–98
Damien Hirst 1965–
Donald Judd 1928–94
Douglas Huebler 1924–97
Carsten Höller 1961–

Lichtwand 2000

Robert Irwin 1928–
Fractured Light — Partial Scrim 1970–1
— Eye Level

Allan Kaprow 1927–06
Jacob Kirkegaard 1975–

Labyrinthitis 2008

Joseph Kosuth 1945–
Zbigniew Karkowski 1958–13
Helmut Lachenmann 1935–

Serynade 1997–8

Malcom LeGrice 1940–
Bernhard Leitner 1938–
Sherrie Levine 1947–
Sol LeWitt 1928–07
List of Referenced Artists/Artworks

Francisco López 1964–
Alvin Lucier 1931–

*I am sitting in a room* 1969

*Still and Moving Lines of Silence* 1973–4

*in Families of Hyperbolas*

*Music for a long-thin wire* 1977

George Maciunas 1931–78
Anthony McCall 1940–
Tristan Murail 1944–
Toshimaru Nakamura 1966–
Bruce Nauman 1941–

*Acoustic Wall* 1969–70

Max Neuhaus 1939–

*Listen* 1966

Barnett Newman 1905–70
Phil Niblock 1933–
Luigi Nono 1924–90
Per Norgård 1932–
Claes Oldenburg 1929–
Bernhard Parmegiani 1927–13

*De Natura Sonorum* 1975

Princeton Laptop Orchestra 2005–
Horatio Radulescu 1942–08
Robert Rauschenberg 1925–08
Alexander Rodchenko 1891–56
Fausto Romitelli 1963–04
Dieter Roth 1930–98

*Bok* 1958

Kaija Saariaho 1952–
Jason Salavon 1970–
Pierre Schaeffer 1910–95
Richard Serra 1939–
Tony Smith 1912–80
List of Referenced Artists/Artworks

Frank Stella 1936–
Karlheinz Stockhausen 1928–07
Atau Tanaka 1964–
Yasunao Tone 1935–

Anagram for Strings 1961
Solo for Wounded CD 1997
Mp3 deviations 2011

Toshiya Tsunoda 1964–

Extract From Field Recordings 1997
Archive #1
Extract From Field Recordings 1999
Archive #2
Extract From Field Recordings 2001
Archive #3
O kokkos tis anoixis 2013

James Turrell 1943–

Light and Space 1980

Various Artists Surrealist Exhibition (Paris) 1938
Dziga Vertov 1896–54
Wolf Vostell 1932–98
Andy Warhol 1928–87
Chris Watson 1952–

Stepping into the Dark 1996
Outside the circle of fire 1998
Alcedo Volcano 2006
A Journey South 2010

Lawerence Weiner 1942–
Hildegard Westerkamp 1946–

Kits Beach Soundwalk 1989

Jana Winderen 1965–
Christian Wolff 1934–
World Soundscape Project 1972–
Stelarc 1946–
List of Referenced Artists/Artworks

Iannis Xenakis 1922–01

*Persepolis* 1971

*La Legende d’Eer* 1977–78

LaMonte Young 1935–

*Dream House* 1974
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birds2 [wav] interleaved audio /2. Passeggiamento_Sonoro/Performance/files/

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25'14" (5.1)_Lb  [aiff]  de-interleaved audio  /10. Buchla/25'14"/  (6/6, Right Front)

25'33" (5.1)_C  [aiff]  de-interleaved audio  /10. Buchla/25'33"/  (1/6, Centre)
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25'33" (5.1)_Rb  [aiff]  de-interleaved audio  /10. Buchla/25'33"/  (5/6, Right Back)
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29'48" (quad)_Lb  [aiff]  de-interleaved audio  /10. Buchla/29'48"/  (1/4, Left Back)
29'48" (quad)_Lf  [aiff]  de-interleaved audio  /10. Buchla/29'48"/  (2/4, Left Front)

30'50" (6ch)_1 [aiff]  de-interleaved audio  /10. Buchla/30'50"/
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30'50" (6ch).2 [aiff] de-interleaved audio /10. Buchla/30'50"/
(1/6, Left Front)

30'50" (6ch).3 [aiff] de-interleaved audio /10. Buchla/30'50"/
(2/6, Right Front)

30'50" (6ch).4 [aiff] de-interleaved audio /10. Buchla/30'50"/
(3/6, Left Middle)

30'50" (6ch).5 [aiff] de-interleaved audio /10. Buchla/30'50"/
(4/6, Right Middle)

30'50" (6ch).6 [aiff] de-interleaved audio /10. Buchla/30'50"/
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36'30" (quad)_Lb [aiff] de-interleaved audio /10. Buchla/36'30"/
(1/4, Left Back)

36'30" (quad)_Lf [aiff] de-interleaved audio /10. Buchla/36'30"/
(2/4, Left Front)

36'30" (quad)_Rb [aiff] de-interleaved audio /10. Buchla/36'30"/
(3/4, Right Back)

36'30" (quad)_Rf [aiff] de-interleaved audio /10. Buchla/36'30"/
(4/4, Right Front)

45'46" (quad)_Lb [aiff] de-interleaved audio /10. Buchla/45'46"/
(1/4, Left Back)

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(2/4, Left Front)

45'46" (quad)_Rb [aiff] de-interleaved audio /10. Buchla/45'46"/
(3/4, Right Back)

45'46" (quad)_Rf [aiff] de-interleaved audio /10. Buchla/45'46"/
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Lake Vistonida [aiff] 2ch audio /11. Lake Vistonida/

ambience_talks [wav] audio (mono) /11. Lake Vistonida
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