

Diffracting digital public space(s)  
- matters and *in-matters* -

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# Abstract

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This thesis is a diffractive experiment, inspired by the *agential realism* of Karen Barad that allowed me to consider *digital public space(s)* through philosophies of technology, design and creative practices and with fictional stories that become waves of unruly phenomena from within. The research assumes an ontological move from *being* to *becoming* through catalytic encounters with others, human and non-human.

Digital Public Space (*dps*) as a term was born between BBC's and British Library's desire to open up their digital archives to the public. The AHRC research project Creative Exchange (CX) adopted *dps* as a design challenge for knowledge exchange. As a member of the CX project I am making sense of *dps* in the context of practices emerging from the hybridity of the digital-physical domain. At the centre of my research are crossovers of academic interests, institutional dispositions, concepts, imaginations, people and stuff – wires, screens, paper prototypes, lines of code, doodles in the corner of the page. Meaningful, like a song, a memory, a photograph, a warm friendly hand or mundane, like streets, pans, toys and dust. I am making sense of how these matter and enable me to re-conceptualise the idea of *digital public space*. I am as concerned with the materiality of *digital public spaces* as with the “nothingness” within its materiality, which I propose is, far from nothing, but *in-material*.

At the core of my investigation is a study of time and memory that contributes to new materialist conversations. By diffracting Husserl's studies of internal perception of time, Stiegler's exteriorization of memories in things, and Simondon's transductive ideas, through Baradian agential realism, I speculate

about *in-matter*. That which is in between and within matter, is time; the retentions of past and possibilities of futures.

The generative differentiation that is underlying my *in-matter* proposal opens possibilities for careful and *response-able* practices. I diffract theories to think *in* methods to build a *framework of emergence*, with which to encounter knowledge through creative uses of digital technologies in public spaces, and allow a discussion of *dps* on its own terms.

I consider three aspects of *digital public space(s)* grounded in collaborative projects: the digital-physical, focussing on participatory design of wearables, the public-private using the production of a public art installation, and the space-place discussed in the context of memorial and war commemoration.

I am 'doing' theory, collaborating in practices and telling a story. I am taking up the challenge of applying Baradian diffraction in creative practices. My experimentation is more than a structural model to present the research. It is inspired by an epistemological disagreement with the separation of the researcher, what is researched, the apparatus of knowing, and presenting knowledge. The reiterations and contingences of this method provoke a rhythm of time, propose a space, part meaning, part tangible, that does not just describe *dps* but performs my relationship with it. My research comes to matter in the *framework of emergence* that proposes new parameters for discussing ethics, politics and poetics of *digital public space(s)* in the making.

# Declaration

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I declare that this thesis is my original work and has not been previously submitted for the award of a higher degree elsewhere. To the best of my knowledge it does not contain any materials previously published or written by another person except when due reference is contained in the text.

Chapter One contains excerpts originally used in the conference paper Ellis Gray, S. and Luján Escalante, MA 2014, 'Digital Dead Remains: Exploring material and in-material legacies', Death Online Symposium, Durham.

Chapter Two, includes insights originally presented in Luján Escalante, MA and Jacobs, N. 2014 'From the Lab to the Lounge' in AHRC Four Hubs Event, Lancaster UNiversity and Lujan Escalante, MA and Jacobs, N. 2016 'Creative Exchange: tools and mechanisms for cross-sector collaboration' in University Industry Interaction Conference, Amsterdam.

Chapter Three contains excerpts originally used in the conference paper Luján Escalante, MA. 2016 'A matter of time and memory' presented at Encounter Materialities, Geneva. Excerpts originally used in Luján Escalante, MA. 2016 'Ageing Playfully: A Story of Forgetting and Remembering'. *Method Story: Involving People with Impairments in the Design Process* CHI2016 Workshop, San José and in Tseklevs, E., Bingley, A. and Luján Escalante, MA. 2016 'Ageing Playfully: co-designing with people with dementia' in Alzheimerforeningen and Alzheimer Europe Conference, Copenhagen.

Chapter Four presents excerpts originally used in Luján Escalante, MA and Boyko, C. 2016 'Numbers that matter: people, open data and wellbeing' in *Wi*

*Journal of Mobile Media* and insights from the experience of Numbers that Matter project and hackthon.

Chapter Six presents excerpts originally used in Luján Escalante, MA, Peniston-Bird, C and O. Wilkinson 2016 'Being There: physical-digital WW1 commemoration' in Reimagining Challenging History Conference, Cardiff.

All have been used following guidelines and permissions from co-authors and publishing venues.

# Acknowledgements

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This PhD was about being *cut-together-apart* through memories and times to come, things and humans – far and near – ideas and dreams, and the places I call home. It came to be through my material and *in-material* entanglements:

My rickety bike which took me on rides around Lancaster, pedalling ideas with views of the River Lune. The always inopportune demands of Whatsapp and my people at the other side of them; it was reinvigorating to know you were there even against the prospect of an always late response. My faithful and mistreated computer, the consoling bang of the clock tower, my love-hate relationship with Spotify, the smell of recently grounded coffee that makes collapse my hometown with Lancaster, towers of half filled drawing pads and my fountain pen-magic wand.

With me, at all times, was the news – or the lack of news – from Venezuela and my people there. The situation in my country tears me apart jointly with what I was doing here, part of me felt guilty for not being there and that feeling pushed me to make the distance worthy. The other part trusted that with my attention here I would escape the horrors from there. News held me up until late, and the lack of it put me to work, so the waiting was bearable.

I owe to a passionate affair with books-timespace travel machines, especially to my battered copy of *Meeting the Universe Halfway* which brought me together with Karen Barad in long late night conversations that she never knew about. My copy of *On the Phenomenology of the Consciousness of Internal Time* through which I attended Edmund Husserl's lectures on time and memory. The two copies, one on top of the other, built an amulet due to be by my screen.

I will be eternally thankful to mother, Mireya Escalante, who taught me with her way to live, ideas of justice, generosity and the importance to stay in the fight (even if it is lost). During this time she bridged our distance in every way possible and impossible to help me; through long overheated Wi-Fi-cutting phone conversations, in these I owe my mobile which survived the downpour of tears and laughter. She co-parented through Skype calls. In these I owe Skype for enduring the daily exchange of granny's math classes and bed night stories for grandson's jokes and anecdotes of first kisses and goals in the last minute, that I missed all to find some hours to work.

I did this thesis through the enthusiastic voice of my father, Ignacio Luján, that I felt as firm as his hands drawing 'escriticos' of sea view.

There are no words to thank Luke Robert Blake, for his patience to understand my ideas talked in wild tongues, for being simultaneously mine and devil's advocate in the discussions that dressed with plenty of coffee and local ales fed this thesis, for driving the ship-flying castle and for lovingly reading straight my curly words. Luke was the magic feather that in between my lips pushed from the height.

I owe Sebastian his humour and entertainment in the dark days – pizza and ice cream with him acquire a sacred and choreographic meaning. And for his resilience, discipline and competitiveness in which I found what it takes to finish.

I did this thesis diffracted across what I embroidered in the long winter of Lancaster and the memories I kept from the revolted hit of Venezuela.

What drives this thesis was a dream of a yellow and blue house.



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Este doctorado fue acerca de lo que significa estar *cortados-juntos-aparte*, de recuerdos y premoniciones, de cosas y gente –cercanas y lejanas- ideas y sueños y todos los lugares que llamo hogar. Fue irse siendo entre enredos de materias y *en-materias*:

Irse siendo con mi bicicleta en los paseos que me brindó alrededor de Lancaster, por donde pedaleábamos ideas con paisajes del mar del Norte, Distrito de los Lagos y el Río Lune. Con las siempre inoportunas notificaciones del Whatsapp y mi gente al otro lado, era importante saber que estaban ahí, aunque mi respuesta fuera siempre tarde. Con mi leal y maltratada computadora-compañera. Con el consuelo recibido por las campanadas de la torre del reloj. Mi relación amor y

odio con Spotify. Con el aroma a café recién molido que colapsa a Lancaster con Mérida, el pueblo que me vió crecer. Con las rumas de cuadernos de dibujar a medio llenar y, con mi pluma-varita mágica.

Conmigo todo el tiempo estuvo la desesperación y la incertidumbre de las noticias que llegaban – o no llegaban- desde Venezuela y de mi gente allá. La situación de mi país rasgó íntimamente todo lo que hacía aquí. Una parte de mí se sentía culpable de no estar allá y fue ese mismo sentimiento el que me empujó a terminar, hacer que la distancia valiese la pena. Y otra parte de mí, agradece infinitamente que estaba aquí y pude escapar de los horrores de allá. Las noticias que llegaban me desvelaron y las noticias que no llegaban me pusieron a trabajar, para marear la espera.

Yo le debo gran parte de esta tesis a mi apasionado romance con libros-maquinas del tiempo y del espacio. Especialmente a mi destartalada copia de *Meeting the Universe Halfway* que me llevó a intimas conversaciones de medianoche con Karen Barad sin que ella lo supiera. A mi copia de *On the Phenomenology of the Consciousness of Internal Time* a través del cual presencié a Edmund Husserl dictando cátedra magistral acerca del tiempo y la memoria. Fueron esas ideas las que movieron mi investigación. Los dos libros formaron una torrecita-amuleto que tenía que estar junto a mi pantalla para que mis dedos funcionaran con las teclas.

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Yo hice esta tesis difractada con lo que tejí en el largo invierno de Lancaster y los recuerdos del calor convulsionado de Venezuela.

Lo que llevó esta tesis hasta el final fue el sueño de una casa azul y amarilla.

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“Nothing more profound than the skin”

Paul Valery

## I. How to read this thesis

Before we begin this introduction, I think it might be helpful to say a little about the organization of the thesis, which does not follow a traditional structure. I am approaching *digital public space* phenomena not from a distance, from where one would get a good vision of its totality and its clear delimitations. I am approaching *dps* as a phenomena from *within*, conscious that while researching I am affecting the phenomena. At the same time, these phenomena affect a swirl of practices of thinking, writing, making sense, making things and dreaming about projects together with people and things. Ultimately – and irremediably – phenomena affect me. The structure and the elements of this thesis aim to make sense of these affections and swirls rather than following a hierarchical chain of thoughts that transfer a premise from hypothesis through a series of linked categorical arguments to definitive conclusions, as end destination. Instead, my end is to get to the centre and from here, to stir.

More than a different structural model to present the research, I propose to challenge epistemologies that present the researcher as separated from what is researched, that presents what is researched as a totality, or as a report of definitive reality. Instead, I test ways of thinking, writing and presenting an investigation that responds to a mode of relating to knowledge. I test ways of making sense of slippery phenomena and of its manifestations, some of which are contradictory, some of which occur simultaneously, some ephemeral like a “dancing flame”. Thinking *in* methods while testing them was a big part of my research, to avoid methodologies that just hold by stabilizing, cleaning, delimiting and repressing, as John Law said (2003, p. 3).

In this thesis is my own take on *diffraction*<sup>1</sup> as proposed in the *agential realism* of Barad (2007). Baradian *diffraction* is inspired by the quantum physics-philosophy of Niels Bohr. Quantum physics gives a solution to the debate on the matter of light as particle or wave, by determining that light is one or the other, through the exercise of the experiment. The implication is that the phenomenal qualities are responsive to the experiment, the measuring tools and the apparatus of knowing. *Diffraction* as an epistemo-methodological proposal uses the physical experiment to measure light as wave, as a metaphor to figure out phenomena from within, as opposed to reflection, the experiment that measures light as particle, representing phenomenon elsewhere.

*Diffraction* for Barad is not about framing the same, but about “patterns of difference that make a difference” (2007, p.72). It is an analytical tool and the phenomenon itself. *Diffraction* aims to move from the representational system to a *performative*<sup>2</sup> way of being part of the phenomenon. *Diffraction* in my work, is about repetitions, frictions, rather than delimitations and definitive outlines. (I explain *diffraction* further in the methodology Chapter Two).

Testing Baradian *diffraction* brought me together with *digital public space(s)* by breaking through philosophical ideas, design, creative practices and fictions like expansive waves or undulations of unruly phenomena from within. My *configurations*<sup>3</sup> (Schuman, 2012) of *dps* as diffractive waves spreading out (chapter 2), is a thinking and generative ‘device for studying (socio) technological –assemblages- with particular attention to the imaginaries and materialities that they join together’. (ibid, p.49)

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1 C. Inventory 1 and Chapter Two.

2 C. Inventory 1.

3 C. Inventory 0.

Barad (2014) explains *diffraction* using the expression *cutting-together-apart*. In my work I imagine what would be to “cut” *digital public space(s)* “together-apart” into *digital-physical* (chapter 4), *public-private* (chapter 5), *space-place* (chapter 6). I make sense of what Barad meant by “cutting-together-apart” using the figure of *(dis)continuums of dynamic and foldable nature* (Interlude). I use the figure (Castañeda, 2002) of *dynamic foldable (dis)continuum* as a descriptive tool that helps me to unpack its meaning making and its material qualities and practices. However, it is also a way of *figuring out* and through it, assuming ‘responsibility’ to be found in the confusion of boundaries and the ‘pleasure’ in their (re)construction (Haraway, 1990). My doctoral research enacts a meeting with *dps* in the making. It assumes an ontological position that expands beyond human centred to include non-human agencies, from *being* to *becoming* through this catalytic encounter.

I am “doing” theory, I am collaborating in practices and I am telling a story, however I am not doing practice-based -or led- research, or research-led practice, not even as Christopher Frayling says, researching through art and design (1993). All of these are methodologies in which researchers and their apparatus of knowing are made and remain discreet. My experimentation with diffraction is inspired by its disagreement with the separation of the researcher, what is researched, the apparatus of knowing, concepts and tools, and the apparatus of presenting what is researched – this thesis. My role is not to describe *dps* phenomenon but rather to bring together interpretations, imaginations and speculations, to localize patterns through encounters with knowledge, things and others.

Testing out a diffractive method was for me a way to be careful and care for the inevitable acts of including and excluding, selecting and discharging what research does when framing questions and answers. By writing this thesis in diffractive way I am trying to include my performance as an inseparable part of dps emerging through my research.

The reiterations and contingences of *diffraction* provoke a rhythm of time, propose a space, part meaning, part tangible, that does not just describe *dps* but also performs my relationship with it: entanglements of matter and in-matter, encounters of theory and practice, objective and subjective evidence, as a model that is concerned with boundaries and their creative tensions, including the tension between *dps*, my research, myself and now, you as you read.

When I replied to the PhD call of the program that supported my research, I read: “creative exchange” to feed a concept of “digital public space”. In that moment I was based at Bristol in an interdisciplinary studio exploring how – what they called – pervasive technologies would weave playful fabrics in the city’s tapestry. I was designing and running big public games in urban spaces and in festivals. I read separately the words; “creative”, “exchange”, “public”, “digital”, “space” and I thought I ticked all the boxes. My background was already in between disciplines, Cultural and Media Studies theories and Creative Media critical practice.

I came to Lancaster, to the Creative Exchange program based in Contemporary Arts and Design and realised that ticking all the boxes separately was not the same as understanding the phenomena as a whole. I had to re-understand my contribution, what my offer would be, and the nature of working not just

interdisciplinary or multidisciplinary, but at the very edge of disciplines that tapped into each other; in between disciplines. This thesis also recounts how by doing this research I became a renewed practitioner; redefined my role and my contribution to a disciplinary field, that more than a steady terrain is composed by muddy waters. The research was not just to model a framework for *digital public space* by feeding ideas and practices, impact projects and meaningful collaborations, but was also to model myself. For this I interrogate and challenge some traditional ideas of being, of staying, of writing, of thinking and of dreaming within academic constraints.

I had to learn to write, to read and respond to the investigation in particular way. I am now preparing the gentle reader to read this thesis in a diffractive way. I am asking you to play with it the cat's cradle game, holding the strings in between your fingers and weaving patterns in between. This is to read in between lines, in between categories, in between academia and industry, in between real and fiction, in between you and me. I invite you to stay in this space formed between the impeccability of my PDF and the creases of your printed copy that for a moment entangle us with digital public space(s).

## II. The Knowledge Exchange

It is also important that I tell you where this thesis comes from and describe you the context in where was conceived.

In 2012 the Arts and Humanities Research Council (AHRC) committed £16M to support four Knowledge Exchange Hubs for the Creative Economy for four years. Each of these Knowledge Exchange Hubs, worked as consortia, connecting research in the Arts and Humanities with a range of creative and cultural organisations, large and small, across the UK, with the clear objective to make measurable social impact; accelerate growth and innovation, generate novel knowledge exchange opportunities, foster entrepreneurial talent and contribute to the development of the UK's Creative Economy.

Traditional university Knowledge Transfer processes begun by taking ideas from academia out into industry, as university policies see the value in connecting their knowledge with society. However, those initiatives were highly criticised for tending to impose academia's own interests on the social context, remaining oblivious to the concerns of their partners in society.

The concept and politics of Knowledge Exchange (KE) came about in the light of criticisms of Knowledge Transfer. KE has been defined as, 'the iterative cycle of sharing ideas, research results, expertise or skills between interested parties that enables the creation, transfer, adoption and exploitation of new knowledge in order to develop new products, processes or services and influence public policy (Lockett et al., 2008). Cruickshank, Whitham and Morris (2012) say that- 'every good meeting, creative conversation or even an interesting Twitter exchange is an example of good knowledge exchange'. It could therefore be argued that these

definitions encompass all collaborative research practices. However when KE is studied extensively, it is usually used in the context of exchange of knowledge between those who do not traditionally collaborate in this way, focusing on cross-sector relationships of universities (Jacobs, 2013) with industry, government and third sector.

In contrast with the perceived value of Knowledge Exchange for society, preliminary reports point out “knowledge exchange is not easy; it may be costly, difficult to implement and take a long time to succeed and these issues may be particularly difficult for small and medium-sized enterprises.” (Abreu et al., 2008). For improving the relation inversion-conversion, the focus of interest was on applying design approaches in developing and managing new KE processes, tools, facilitation technics and evaluation system. Examples of some of these design approaches are seen in the work of Cruickshank, Whitham and Morris (2012), specifically on the design of novel tools for Knowledge Exchange.

Knowledge Exchange Hubs for the Creative Economy design strategies to convert Knowledge Transfer into Knowledge Exchange, experimenting with processes inspired by co-creation in which industry as well as academia meet in the middle and both contribute ideas, interests and initiatives. For this, each of the four Hubs employed their own set of strategies to catalyse Knowledge Exchange between industry and university. The only Hub whose strategy was to fund doctoral students was The Creative Exchange.



### III. The Creative Exchange

The Creative Exchange (CX) is one of these four Knowledge Exchange Hubs funded by the Arts and Humanities Research Council. The Creative Exchange is a partnership of Lancaster University, University of Newcastle and Royal College of Art, which together undertook research directly to understand, deliver, facilitate and evaluate processes of Knowledge Exchange in new ways. This involves developing, testing and evaluating new approaches to it. These range from innovative workshop activities right up to a new type of PhD programme. The concept explored, arising from Knowledge Transfer, aimed to move beyond Knowledge Exchange, and create a new collaborative ethos of Creative Exchange where synergy between partners creates new knowledge, not known previous to the encounter.

The Creative Exchange partners at Lancaster are based within Imagination Lancaster, which is an open and exploratory design-led research centre at Lancaster University. Rooted in the design approach of Imagination Lancaster, The Creative Exchange proposed to designed novel tools and activities to facilitate collaborative projects, brokered by doctoral students who like me, undertook practice-based PhDs around the topic of 'Digital Public Space'. This interdisciplinary group of students, was enabled to be independent co-investigators in an experimental form of PhD, novel in its type in the UK, whose research themes emerged from collaborations in short design projects with external partners, from creative industry, local government and the third sector. My role in this CX projects vary from project to project, the only common feature

was a horizontal one where the directions and the methods of the projects were defined for *all* the partners meeting in the *middle*.

My role as doctoral researcher in the Creative Exchange was to defend and cultivate the frontline of this industry and university matchmaking. The academic partners span a wide range of disciplines including: programmers, engineers, medics, historians, architects, sociologists, artists and designers. The non-academic partners vary, from creative industries, local authorities, governmental bodies, big name companies, to SMEs and local artist collectives. I started to build – not at all times consciously – a new practice through a process in which I had to make use of skills that I did not know I had, and I had to forget about my own *modus operandi*; my interests and habits of working.

My role in the CX projects involved linking partners, facilitating creative exchange events and workshops, negotiating participations, translating discourses into a common and comprehensible language, delivering in a time scale and in a rhythm that encompasses the academic partners with the non-academic partners and into social impact outcomes. Once the partnership is produced my role was to make sense of the production of the projects that sometimes was unexpected, sometimes difficult, and to delimit and articulate the experience into something nutritious for the concept of *digital public space* body of knowledge and useful for KE mechanisms and tools.

Through CX projects I met senior academics – and young researchers – partners interested in academic outcomes – publications, conferences – usually related with practice based or action research, or with a particular interest in increasing their own department's social impact and collect points for the REF. For these

partners time for collaboration was slow and extendable. Non-academic partners were normally invested in applicability, commercial capabilities or potentialities for social change, for which time was their main resource, always short, always precious. In managing CX projects from both sides, I also encountered the bureaucracy of their respective settings, which also change in speed, language and priorities. For example, after academics and business partners finally agreed on something, I had to deal with universities and companies administration, although to relate this would be another story. Then were the CX PhDs that were interested in steering the conversations in a direction that could feed their own specific themes all under the umbrella topic of *digital public space*.

This was a rather messy process full of unexpected challenges. The Creative Exchange team and I were iteratively thinking and revisiting processes of collaboration trying to extrapolate meanings, lessons and concepts that enlighten ways to improve those processes and relationships. Consequently, methods of the Creative Exchange program evolved and developed as the program progressed. This was not a linear process but rather a cycle with stages of reiteration and auto-evaluation, which I could not but see as a diffractive process. (I will expand on this in Chapter 2).

My participation in the CX projects aimed to inspire potentialities of the seemingly irreconcilable interests of academia and the practices of creative businesses. During these collaborations I recorded encounters with different imaginaries and aspirations of *digital public space* at times highly theoretical and even philosophical and at others, very grounded in the everyday experience of digital economies. In this sense, my investigation emerges thinking critically

about practices of exchanging with people with different expertise, agendas, languages, interests and dreams about *digital public space*.

At a meta level it was always to do with politics, ethics and complexities of collaborative and co-creative practices in the cross-sector setting. It was not a detached study but committed to the understanding of which differences matter and for whom and how materialities (and in-materialities) engage or disengage processes. It was not about do and then reflect. It was about reformulating knowledge-making in practice. It was an agreement on understanding the phenomena as becoming in the encounter, not as uncovering pre-existing things. I signed up for a process that was about making sense of creative exchanges of knowledge while making sense of ideas that were emerging in those exchanges and ways to improve the relationship for future engagements by adding design value. In this sense, I was in a tripartite project, on one side, I was developing this research, on another I was committed to each of the small design projects in which I participated, and with that I was part of the overall Knowledge Exchange project of The Creative Exchange. I found myself and my practices diffracted too.

## IV. How this project comes to matter

This passage quotes a 'certain Chinese encyclopaedia' in which it is written that 'animals are divided into: (a) belonging to the Emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) et cetera, (m) having just broken the water pitcher, (n) that from a long way off look like flies'. In the wonderment of this taxonomy, the thing we apprehend in one great leap, the thing that, by means of the fable, is demonstrated as the exotic charm of another system of thought, is the limitation of our own, the stark impossibility of thinking that. (Foucault, 2002, p. xvii)

At the centre of my interest is exactly this system of thought that Foucault comprehended; a system of thought and how it matters. In a way I am proposing to look for ontological alternatives to academic realism, to look into politics of reality and philosophies of becoming through technology, to construct a language that describes, generates and informs *dps* creative methodologies.

The very first realisations I had as soon as I started to think about *digital public space*, was that the words, the order of the words, the meaning of the words in relation to one and the order, matter. The words 'Digital', 'Public' and 'Space', create different worlds if they are capitalised than if they are singular. In capital they are definitive proper nouns. The words 'Digital', 'Public' and 'Space' mean something different once they are together, and once they are together they open different perspectives depending on the emphasis of the words than if they are read in couples. For instance, if one makes emphasis in 'public space' or in 'digital public', one is involved not just in two very different conversations and disciplinary fields but one is engaging with very different things.



*Figure 1 Dalton, B. (2013) 'Reading Digital Public Space'.  
Accessible at  
<http://thecreativeexchange.org/activity/reading-digital-public-space>*

We could be talking about smart cities, Facebook, internet of the things, e-books, Edward Snowden, community boards, military drones, Digital Humanities, archives, democracy, games, digital division, the weather, surveillance, a bench in the park, virtual reality, Open Data, a piece of interactive cloth, bus tickets, Minecraft, digital commons, design obsolescence, locative media, religion, 3D printers, health system, the selfie stick fever, a musical instrument, storytelling, digital paedophilia, Human Computer Interaction, policymaking, wellbeing, maps, interactive documentaries, identity, privatization, heritage and tourism.

We could be talking about all of those things and nothing at the same time. In this sense Digital Public Space is more than just a phrase made of words and words made of letters, together they quickly become a term. A grey elephant term, heavy, corrugated, rare to spot, the favourite flashing star of funding

applications, conference coffee flavoured, glow in the dark, stinking of office desks, bureaucratically slow, and that ultimately obscure signifiers rather than communicate any meaning useful to creative practices, to describe collaborations, analyse relations, to make sense, to realised or to evaluate projects. *Dps* needs a framework, a language.

In *A Cyborg Manifesto* (1990), Donna Haraway, recalling Fredric Jameson, calls for 'cultural reinvention of politics from within, as there is any place from without that gives meaning to the comforting fiction of critical distance', in the spirit of avoid dominance and normalization, 'if we are imprisoned by language, then to escape from that prison-house requires language poets' (p.194). This thesis is my attempt to answer Haraway's call. I thought the wider *digital public space(s)* would be handier; in lower case, in plural, that talks easier about its simultaneous, ephemeral, omnipresent and intimate nature, about its laughable taxonomy, about its futuristic imaginary and entangled bunch of wires, about its incredible potential for inspiring creativity and philosophical thought, about its contesting politics and its way to provoke encounters, about its bicycles and friendly faces.

I looked into ontologies that refused binary, pre-existing separations, because the first striking quality of this closer, inclusive *dps* was the impossibility of separating its three words, and the impossibility of these – intertwined – words to be a category or a pure pole at the extreme of a gradient. With the impossibility of its categorization, was also the impossibility of finding it in its pure state, in essence, that one could get hold of it. I looked into ontologies of becoming through the encounter, generative differentiations, and human-

techno-logical settings to contribute towards a critical framework from which to build a language that allows us to call *digital public space(s)*, in practice, by its own terms.

I propose *digital public space(s)*, not as an institutional vision, not as state policy, not as utopia, but more like a heterotopia (I will discuss this forward in Chapter 6). Heterotopias, as Michel Foucault define them “are disturbing, probably because they secretly undermine language, because they make it impossible to name this and that, because they shatter or tangle common names, because they destroy 'syntax' in advance, and not only the syntax with which we construct sentences but also that less apparent syntax which causes words and things (next to and also opposite one another) to 'hold together'.” (2002, p. xvii).

In this construction of a language that spells out *digital public spaces*, I took Law’s (2003) dare to make a mess with methods and infect with *allegory*<sup>4</sup> my travels from ontologies through philosophical thought across politics and epistemologies to the bread and butter of creative collaborations and back again.

So what is allegory? Here’s a quick and dirty set of suggestions. Allegory is the art of meaning something other than, or in addition to, what is being said. It is the art of decoding meaning, reading between the literal lines, to understand something else or more. It is the craft of making several not necessarily very consistent things at once. It is the art of crafting multiplicities, indefinitenesses, undecidabilities. Of holding them together. Of relaxing the border controls that secure singularity (ibid., p.9)

For this I de-construct and re-construct a language that allows me to approach, think in terms, address, scope and evaluate *digital public space(s)* practices with,

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<sup>4</sup> C. Inventory 2.



what I proposed as the *framework of emergence* (I will start its elaboration from Chapter Three onwards). This is a model that helps to work out messy and unsteady reality and staying true to its messiness, that challenges boundaries and that talks about, and *in*, creative encounters. In spelling it out, I am asking the double task of reading its sense, and vocalising it, to be aware of rhythms, meanings and figures that emerge from the combination of words.

Words that matter are collected in an inventory at the end of each chapter. I marked each 'inventory of words that matter' with a yellow line to make it easier to find. The reader is invited to jump out of text and into the inventory and back again, as a companion, to avoid getting lost in translation.

## Inventory of words that matter n.0

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... it cannot be language what is fundamental, but that it must be reality which to speak, lies beneath language, and of which language is a picture, [Borh] would reply, 'We are suspended in language in such a way that we cannot say what is up and what is down. The word "reality" is also a word, a word that we must learn to use correctly. (Petersen cited by Barad, 2007, p. 205)

This thesis comes to matter through an *inventory* of the relations of words and things of *dps*. In each chapter I am compiling/inventing terms that summarize the discussion and add up to the language of *dps*. In this section I already posit two terms that are going to be key for the following arguments.

- *Figures and figuring*

This involves a method through which things are made and a resource for analysis of unmaking (Schuman, 2012, p. 50). The use of *figure* implies re-contextualization, packing meanings, and unpacking meanings that have been figured. The *figure* talks about meaning, form, potential and accumulations of senses as well as tool to find out.

- *Configurations and configuring*

The method assemblage of configuration could be understood as a device for articulating the relation between the 'insides' of a socio-technical system and its constitutive 'outsides' including all of those things that disappear in the system's figuration as an object. (Schuman 2012, p. 56)

*Configuration* brings things together in a particular arrangement. The first step in the *configuration* is to 'reanimate the figure', that is, to pay attention to the rhetorical constitution and category of existence. It alerts the biographies,

historicitities and encounters of the figure. It combines material formation with the power of language in an assemblage of knowledge. It could be understood as a device for articulating the relations, the insides–outsides, including all of those things that disappear in the system’s *figuration* as an object (p. 55). *Configuration*, concludes Schuman, is a practice from within, situating the researcher-user as internal to the ‘technologies that engage us and with which we engage’ (ibid.) and situate me and this thesis as the apparatus that in-form and give form to *digital public space(s)*

Note: Across the body of this thesis, ‘words that matter’ are presented in *italics* and discussed at the end of each chapter in the ‘inventory’. Trying to fit this diffractive shape project into the linearity of the thesis format, I had to locate inventory after the chapter, but the reader can use it as companion to look up for words in *italic* that are in the text.<sup>5</sup>

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<sup>5</sup> The first time that a ‘word that matters’ appears in the text, it will be indicated with a footnote like this one.

## Chapter One

Digital public space(s)

- how digital comes to matter.

# 1. Digital public space(s)

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## How digital comes to matter.

All the predictions were wrong! By some kind of holy fortune and against all calculations we did not become virtual. We did not incorporate our daily routines to the other side of the screen; we did not make love with globes and goggles but with sweaty sticky bodies; we still walk in parks smelling flowers (if we are lucky) and in between streets smelling of car pollution. We read books made of dusty paper pages and drink burning hot coffee with friends made out of flesh and blood, just like us.

Until the late 90's the virtual world was taking over the physicality of the old and rickety world. A cyberspace was predicted – at times prophetically, at others apocalyptically, by cultural critics and technologists, to replace the world touched and suffered; that virtuality which the web 2.0 postulated as the new, sterilized, parallel country; that territory populated by avatars of big boobies and muscled silhouettes; that world that was around the corner of the eminent late – post – modernity and just crossing the computer screen, its ultimate frontier. That virtual world was forgotten as a delirium in the century's final hours.

The digital kingdom, immersive and ready to be conquered, is melting in and out of one's concrete experience. It breaks out from its obsolete screens; it leaks through its permeable boundaries with our everyday humdrums and excitements, conquering physicality. Digital spaces become entangled with the physical spaces. For some, digital is becoming touchable, squeezable and perceive at a viscerally sensorial level. For the others, still sceptical, the digital makes use of oyster cards, QR code shaped bus stop timetables, map apps and

smart bins to pin down a sense of awareness of hybrid digital-physical experience everywhere.

Insofar as I use or employ technology, I am used and employed by technology as well... we are bodies in technologies. (Don Ihde cited in Haraway, 2008, p. 249)

Emerging media theorists have attempted to study these phenomena in terms of pervasive media, hybrid spaces and digital enhanced experience. Engineers have looked at it to serve the purposes of Human Computer Interaction. But the core of the issue goes beyond perspectives of Media or Technology Design. The issue of the hybridity of digital-physical is a phenomenon that installs a new domain of existence and this is at the centre of *digital public space(s)*. To approach *dps* phenomenon has to do with an experience that challenges matter considered as inert entity, the relation of time and space and ways to consider relations of self and others becoming in technological settings. It also has to do with imagining, *figuring*, *reconfiguring* and making sense of these new phenomena and how narratives and practices construct it.

This chapter aims to set up *digital public space(s)* in terms of digital-physical as a new domain of existence. To do this I am going to review *dps* literature as a starting point of the discussion, deliberate how its material quality separates it from its antecedent considerations of virtual or cyberspace, and finally propose *Agential Realism* (Barad, 2007) as a framework that is concerned with materiality in terms that help to figuring *digital public space(s)*.

## 1. 1. Towards digital public space(s).

Where anyone, anywhere, anytime can access, explore and create with digital content.<sup>6</sup>

The Digital Public Space was an initiative that began within BBC Archive Development and it is being investigated now by the BBC, BFI, Tate, British Library, Arts Council England, FutureEverything and as a general project of The Creative Exchange and its partners across sectors. In 2012 Tony Ageh, then of the BBC, in a Speech in the Museum of Science and Industry in Manchester, shared his vision about Digital Public Space and defined it in comparison with traditional concepts of space:

My dictionary has two interesting definitions 'space as an area designated for a particular use' (as in picnic space) or space as in 'a multi-dimensional expanse containing the entire material world and its events' (as in Star Trek). In my way of thinking the Digital Public Space is a composite of both definitions. (Ageh, 2012, p. 3)

The above definition is not very explicit on how Digital Public Space is different from the Internet in general. Ageh explained:

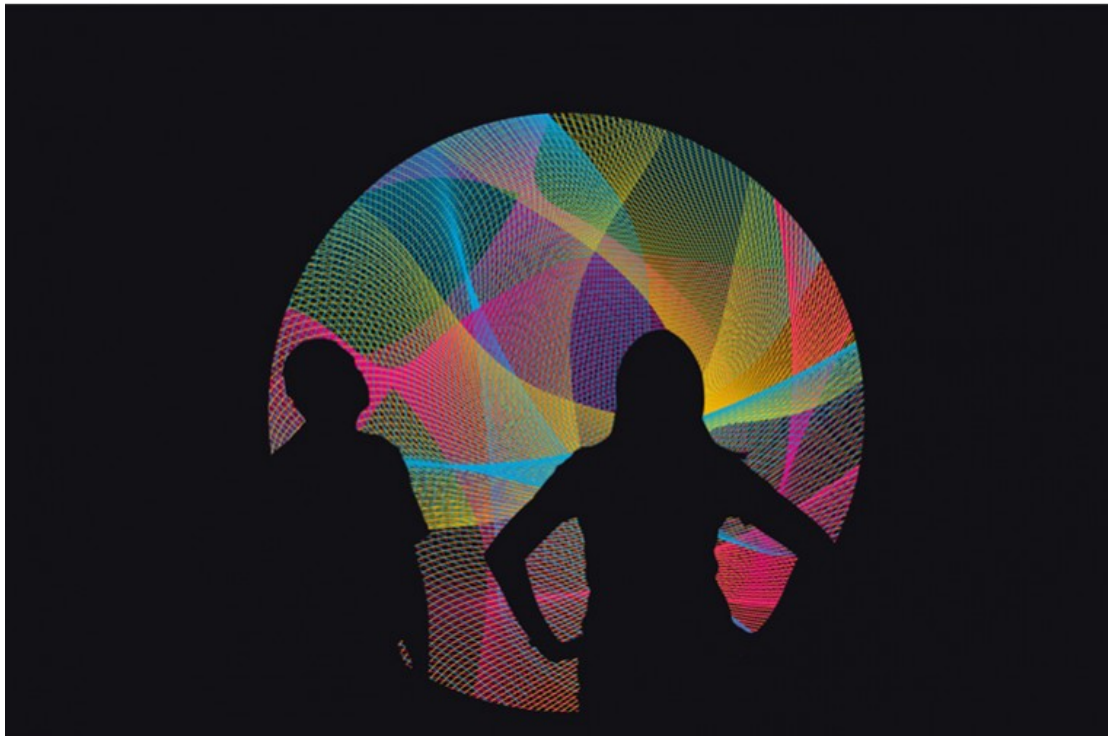
'The clue is in the word 'Public'. The Internet is a digital space and it does deliver plenty of public benefit. But what's different about the 'Digital Public Space' is the underlying intent – the 'application' of the medium, rather than the underlying technical fabric. (ibid, p. 4)

FutureEverything CEO Drew Hemment, with Bill Thompson, BBC's technology journalist and Rachel Cooper, main investigator of The Creative Exchange, have co-written and compiled much of the literature currently found on Digital Public Space (Hemment et al., 2003). Hemment describes the Digital Public Space in

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<sup>6</sup> From The Creative Exchange website <http://thecreativeexchange.org>

terms of an 'accessible cultural and arts archive', institutionalized in the figures of the BBC, British Public Library, Europeana Archive and potentially others. Most of the other authors in the same publication (Hemment et al., 2003) follow that idea of archive, problematizing the 'public' in terms of access, and focusing on Heritage, Culture and Arts.



*Figure 2 This is the cover of Digital Public Spaces (Hemment et al., 2013). In the image pictures people observing a kind of digital colourful net weaves in from of them. My argument is just the opposite: we are part of that weaving.*

In this publication, Ageh describes Digital Public Space as 'a way to deliver the most we possibly can from our vast and priceless archives' (2013, pp. 5-6), scripting the term in the mission of the BBC to democratize Culture. In this order of ideas, issues of rights, protocols and commons naturally emerge (Cousins, 2013, pp.12-3). Following this perspective, James Bridle discussed Digital Public Space in relation with a more contemporary role for the public libraries,



emphasizing its “Public” aspect and drawing a parallel between physical libraries and digital archives.

Steve Crossan (2013), Head of Google's Cultural Institute, in his article *Digital Networks, Public Spaces* follows an idea of “democratization” (of the cultural archives) comparing Digital Public Space with the Greek concept of Agora: ‘a public space to which everyone has access, where it’s possible to meet anyone else, and where everyone’s voice can be heard’ (pp. 14-15). The problem of the ‘Public’ is reduced via an agreement on ‘proto-colisation’ as the ‘great solution’ – Crossan adding- ‘if it gets adopted’ (ibid). Paula Le Dieu (2013) expands on that vision of Digital Public Space as opened cultural archive to ‘enrich and accelerate the social transformation from public consumption of culture to public participation in culture’ and at the same time sees it as its major ‘challenge’. (pp. 16-17)

In the same collection of essays, Jacobs, Thompson, Myerson (and others), propose a Taxonomy of Digital Public Space attempting to solve the ostensible shared problem of ‘Public’ by differentiating from ‘private’, ‘social’ and ‘personal’. What interests me from this work is the contrasting of Digital Public Space with Physical Public Space, bringing about the question of ethics and cultural uses of both spaces.

I would like to stop, to reflect on the main problem I see in all these visions. These authors are defining the notion of Digital Public Space following a certain word order in which Digital Public Space is,

1) *Either a 'public space' but digital, or,*

2) *A 'digital space' –as in the internet- but made 'public', as opposed to private ownerships of information.*

In both cases, the understanding of culture is reduced to notions of heritage, museum archives and extremely good HD quality pictures of museum collections. I disagree with this capitalized notion of “Culture”. I propose *digital public space(s)* that are to do with a concept of culture in lower case, one that includes everyday human making, daily stories, anonymous comments, individual notes, marginalized voices, the peripheral discourses, the contestant practices and answers to the establishment. *Digital public space(s)* made of accumulated uses and reuses of everybody’s culture and that produce and reproduce plurality rather than the digital reproduction of “priceless” archives, curated and selected under a very specific political and economic interest. The issues of ‘public’ and ‘access’ would not be so problematic then.

In both cases, one and two, the uses and protocols of ‘Public’ became problematic, as it is problematic in the concrete world as well: what exactly is the public? The museum, the library, the road, the mall, the square? Is the public here indicating a mode of behaviour? Or referring to a particular context? Public as opposed of private? Public as targetable audience? Public a state service? (I will extend on this on Chapter 6).

In case one, the *public space but digital*, Digital Public Space is seen as a parallel of the physical world, as a layer on top of the public square, or the city. In the second case, a *'digital space' made 'public' or opened*, sounds as if Digital Public Space was private and is *just* getting public, a project that relates archives with ‘democratization’ and accessibility. If that is the case, that project is going to find

authorship rights and commons as its big obstacles, the same obstacles that those collections face in their physical counterparts.

Digital Public Space as an institutional project of accessibility would depend upon the institutions' ethos, philanthropic initiatives and individual willpower. In the cases of BBC and Europeana, as the institutional mother and father of DPS, Digital Public Space would depend upon their disposition and availability of resources to "open up". What could one say about other institutions, other archives and collections? Is the notion of Digital Public Space reduced to specific and local circumstances? What is happening in the rest of the world? Can we apply the notion of Digital Public Space at a global level?

While writing these pages I received an online petition on my Facebook account, supporting the cause of 'keeping Europeana archives open'.<sup>7</sup> What would happen if economic, political or circumstantial conditions of these institutions changed? Would it mean the end of the Digital Public Space? – Of course I signed immediately in the anguish that my subject matter disappear for lack of signatures. I never checked the results of this petition. What would happen if technically or legally those archives cannot be opened up? Is the Digital Public Space limited to the good will, to an institution, to a country or continent? I do not, I cannot agree.

My thesis is that *digital public space(s)* has to be studied as a whole, as phenomena, as a set of human practices inseparable of material implications. I oppose *Digital public space(s)* as a separated layer on top or below our place that would imply a separation. My argument is to consider it in terms of experience

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2 (<http://www.ipetitions.com/petition/keep-europes-culture-open-to-everyone-online/>)

space of becoming the 'bodies in technology', using and used by technologies, that Don Ihde saw (2002). In this sense, *digital public space(s)* cannot be just a project of an institution. However, this imaginary of institutional interests matters, so my interest is to revise existing notions of Digital Public Space and with it set the discussion that will follow in the body of this thesis.

I am closer to some of the ideas of Neville Brody, who emphasises in disciplines, practices and basically new politics of knowledge (ibid). In his article Digital Public Space gets described as 'New Renaissance', where disciplines merge or 'dissolve' into 'post-disciplines'. He adds:

This venture will have a massive impact on every face of our lives, from new forms of governance and community to new methods for learning and teaching; new trading mechanisms and economic models; new forms of culture, new dynamics of audience participation, new narratives, new ways to solve problems. (Brody, 2013, p. 11)

Emma Mulqueeny (2013, p. 29) retakes the idea of Digital Public Space as 'reverberations of Renaissance' or the 'second Renaissance now'. In terms of how people learn and how people share their knowledge.

Jussi Parikka and Paul Caplan (2013, p. 28) concur with the renaissance of 'post-disciplines' and review 'remixability' as emerging practice of Digital Public Space. This view on the reformulation effect of Digital Public Space on disciplines and the ethics and aesthetics of appropriation, remediation and remixing, surged a more useful proposal that introduces 'commons' in the equation and questions the reparability of open and closed, private-public and owned-taken. Parikka and Caplan (2013) argue "The archive is a contested space. For digital capital the archive is private, proprietorial and tightly (digital rights) managed. For digital

remixologist: public is common and open' (pp. 28-9). I sign in for this inseparability as one of the qualities of *digital public space(s)* (the aspect of public-private and the value of owning is discussed in depth in Chapter 5).

By considering *Digital public space(s)* in terms of becoming through contentious practices, the 'public', 'access' or 'openness' aspects of the archives ceased to be an issue due to practices of appropriation, popular curating, hacking, remediation, personalization and remixing, which are increasingly gaining terrain. The challenge –for cultural institutions- is to understand and assume new sets of protocols. It is urgent that these institutions catch up with emerging practices and disciplines and open protocols that will not just make their content relevant and alive again, but they are trying to preserve something that is being taken from them anyway. The question is more in terms of 'relevance' than 'accessibility'. Neville Brody raised pertinent questions in this vein:

How should we imagine this space, what are the visual and experiential metaphors? How should we make sense of our journey lines? Who will be the farmers, shepherds and librarians? (ibid., p. 11)

Marleen Stikker (2013) proposes Digital Public Space as 'Public Domain 4.0' and describes it, almost, as the evolution from domain 2.0 or cyberspace. I agree with Stikker when draws attention to Public Domain 4.0 in these terms:

Technology has transformed our physical space: Internet of Things, RFID, sensors and advanced mobile technology. It now occupies the streets, our homes, our shops, our transport systems. We live in the time of "interreality", of mixed reality – there is interference between the programmed and the physical space (p. 32)

And she adds:

We need to determine what to do with this dimension of measurable things around us. It [Digital Public Space] even affects the notion of our bodies and the notion of the self. The blinking cursor is not longer outside of us. We are the cursor. It is internalised, as it were – as a third, additional domain. (ibid.)

I concur with Stikker in my proposal for an ontological readjustment that means the internalization of the digital and the exteriorization into a space transformed by code. (I am going to expand on technological processes of *internalization* and *exteriorization*<sup>8</sup> in Chapter 3).

Nowadays, these three notions of public domain coexist: the public domain in the physical space, the public domain in cyberspace and the third emerging public domain that extends cyberspace into the physical space. (p. 32)

*Digital public space(s)* are happening, are generated by and are generating new reconfigurations of reality that transform subjectivities and inform the making of the everyday. *Dps* is modelling the legal, the political, the ethical and ways to relate with one and each other, as individuals or as collective, part of communities or institutions. Digital Public Space is a name in the initiative of big, heavy and established institutions such as BBC Archive Development and British Library, British Film Institute, Tate, and Arts Council England, FutureEverything and The Creative Exchange, an initiative that investigate forms of agreements on opening up their archives in more democratic ways. That indeed, is the biggest evidence that *digital public space(s)* are happening. In this sense Digital Public Space institution initiative is more a consequence than a foundation of *dps*.

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<sup>8</sup> C. Inventory 3.

*Digital public space(s)* as a new domain of existence; in which ‘we are becoming cursors’ and ‘bodies in technology’, does not require a theory on how to do it, a blue print on how to make it possible, how to open it up, or install it as a service for the tax payer audience. All that would be consequences of becoming in *dps*. The phenomena is moved by Stikker’s principle of coexistence, that requires a revisiting of ontological stands moved by that principle; epistemological reconfigurations of learning and sharing knowledge and a language and a form to figure *digital public space(s)* without cleaning it or flattening its own multiple nature, or as Stikker puts it:

[This] brings us to the awkward situation that, while there is a lively debate about the interpretation of the law, we lack the ability to discuss the meaning of technology...To safeguard the public domain in all three dimensions we have to develop a common language. (p. 33)

The work of Michelle Teran, in the same publication (2013, p. 34), is the most responsive to this spirit of coexistence and the need to develop new languages and enactments of *digital public space(s)*. It the slippery phenomena that John Law (2003) refers Michelle Teran recurs to the ‘language poet’ that Donna Haraway (1990) was invoking and to the allegory Law (2003) proposes. I quote Teran in full:

A container of stories depicted through online video	Intimacy at a distance
An arrangement of multiple temporalities	Distance
Geotagging online information back to the city	Curiosity
Unofficial archives	Longing
Unofficial maps	Desire
Located narratives	Getting lost
Everyday performance	Living autobiographically
Ephemera	How we create identity in narrative
Forgotten histories	Performing excavations of the recent past Archeology of the everyday
YouTube	Stopping flow
The personal made public	Freezing timelines
The publication of the private	Slowness Micro-histories
Digital Public Space	Biography Memoir Memorial
To inhabit both city and network	Life as an urban stalker Following traces
A tension between the online domain and the domain of the city	A private detective
Life as an online stalker	A journalist
Invisible global audience	A spy
To witness, categorize, collate experience To observe and interrogate	The implications of observation
To appropriate, misuse and recycle Creating constellations	Leaky maps
Emergence of the curatorial	Pilgrimages to the spaces of memory
An invitation to follow	Bearing witness
Sharing memories, sharing space	There's no such thing as an innocent bystander
A view within	An intimate encounter with a stranger.



My understanding of *digital public space(s)* arises from the spirit of Teran and Stikker's conception of *internalization* of the cursor and *coexistence* of physical and cyberspace, from which emerges a third domain. In a sense my whole project is a response to that need of ontological re-understandings that this new public domain proposes, and creative enactments of these understandings. However I am going to challenge Stikker's realisations of cyberspace, or the digital, as 'invisible forces' and reclaim its materiality. In the next section I will discuss the materiality of these forces, and their perceived immateriality and invisibility as socio-political constructions.

## 1.2. Getting Real<sup>9</sup>: the virtual, the actual and the digital.

Purely actual objects do not exist. Every actual surrounds itself with a cloud of virtual images. This cloud is composed of a series of more or less extensive coexisting circuits, along which the virtual images are distributed... They are called virtual in so far as their emission and absorption, creation and destruction, occur in a period of time shorter than the shortest continuous period imaginable; it is this very brevity that keeps them subject to a principle of uncertainty or indetermination. The virtuals, encircling the actual, perpetually renew themselves by emitting yet others...in the heart of the cloud of the virtual there is a virtual of a yet higher order...every virtual particle surrounds itself with a virtual cosmos and each in its turn does likewise indefinitely. ...These are memories of different sorts, but they are still called virtual images... (Deleuze, 2002, p.148-9)

A big obstacle in trying to grasp mixed reality or coexistence of physical and digital is that authors tend to use different terminology (or same terms to mean

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<sup>9</sup> This subtitle makes reference to Barad, K. (2001). 'Getting Real: Technoscientific Practices and Materialization of Reality'

different things). For instance, *virtual* in Stikker's virtual public domain 2.0 (2013) and *virtual* as understood by Deleuze (2002) in the quote and the 'virtual' in Virtual Reality, mean very different things. In the efforts of building a language to reconfigure and figure *digital public space(s)*, it is essential to clarify terminology and do etymological agreements at the same time as acknowledging that all meanings are entangling together in the mattering of ideas.

### **Revisiting virtual -as different from digital.**

The term *virtual* is commonly associated with 'virtual reality', 'cyberspace', informational environments or a sort of illusory datascape that opposes the reality of physical existence. Equally confusing, the term 'virtuality' has often been used to signify either the opposite or a lack of reality, a state of unreality or absence. I am starting from clarifying *virtual* and *virtuality* as separated from their common associations in opposition to the *real* and with digitally mediated environments of cyberspace type.

According to the online etymological dictionary, *virtual*, comes from the Latin *virtualis*. It was used in the sense of *human virtue*, the qualities of manhood and capacity of being something of excellence. At some point in the Medieval 14C-15C, its meaning starts to refer to the potential for excellence or for virtue, it could be in manhood but *may or may not manifest*. *Virtual* maintains this sense of 'capable to produce an effect' until 1959, when its computer sense is first introduced; not 'physically existing but made to appear by software' (etymonline.com).

The *virtual* as concept has a longer and prolific history than the short recount of digital technological production. I will very briefly revisit some of *virtual*

figuring, however my job here is not to theorise about *virtual*, but to look into the spells that the word does.

*Virtualities* are not just 'ideas' but things: 'a code, habitus or class that exists even if one cannot treat it as a tangible object' (Shields, 2006, p. 284). In Proust's work for example, memories are *virtual*: 'real without being actual, ideal without being abstract' (cited in Shields, 2003, p. 25). For Bergson (1999) too, *virtual* denotes the nonmaterial properties of human 'memory-images' that have to be *actualized* by means of perception in the present moment to become effectual in daily praxis (in Van Doorn, 2011, p. 533). For social constructivism, gender for example is *virtual* that will be rendered in to material practices, behaviours and bodies (Butler, 1993, p. 190).

Anne Friedberg (2006) sees *virtual* in the context of history of arts; painting, photography, cinematography forms as the mediated representations and "visual registers" of *virtual* 'images that populated our phenomenological world' (Friedberg, 2006, p. 11). *Virtual* images have to be understood as part of materiality and reality but of a different kind, Friedberg adds, 'a second-order materiality, liminally - in temporal state of - immaterial' (Friedberg, 2006, p. 11).

Deleuze (2002) understands by *virtual* an aspect of reality that is ideal, but which is nonetheless *real*; *virtual* is not opposed to "real" but opposed to "actual". What interest me about Deleuze's approach are the two identified aspects of the *virtual*. Firstly, a kind of surface effect produced by actual causal interactions which occur at material level – similar to Friedberg's representation or visual register. Secondly, *virtual* has a *generative* aspect or nature, conceived

as the potentiality that becomes fulfilled in the actual, that old *may or not may manifest* that the online etymological dictionary was referring to.

Instead of treating the *virtual* as unreal, these authors have approached *virtuality* as part of reality. Memories, hopes and affects, 'mental' images that are essential to produce and understand, to relate with elements of our daily 'real' lives, although they are not actually present in any tangible sense. (Van Doorn, 2011, p. 533).

Summarizing this short trip across *virtual* meanings and matterings, there is a myriad of levels and layers of the *virtual*. *Surface virtual*, as the image or register before it is actualized into actual. *Generative virtual*, that lives in all, concrete and ideal – including digital worlds. In this sense, it is the creative metaphor, the 'inspiration' for materialization as *actual* – or *digital*. In addition, the shorter story of the *virtual digital* that is configured in digital environments (cyberspace, etc.). In this significance, *virtual generative* is *actualized* not in the actual or concrete but within the digital environment. Nonetheless all three meanings spell out and matter when we say and write, think and imagine *virtual*. Do we have to agree on one?

I am setting out the *virtual* drifts that are going to get important for *dps* later on in my arguments:

- 1) Firstly, virtual is not the opposite of real, but part of it: a generative part of it.
- 2) It involves a sort of process, dialectic, rendering, materialization or exteriorization; becoming actual (tangibly or digitally).

3) In this generative aspect, *virtual* implies a journey, a time and space. Even if it is that 'shorter than the shortest continuous period imaginable' that Deleuze was reciting (2002, pp. 148-9).

4) Or at least the potential for it, again that quality of *may or may not manifest* inherited from its *virtue* predecessor. This last quality of the virtual made its process, the process that marks a continuity – even the shortest imaginable – this quality makes the process discontinuous; it *may or not manifest*, a certain *virtual* principle of uncertainty.

### **Getting Real – as different from concrete.**

While talk about “real” on the precipice of the twenty-first century may be the source of such discomfort that it always needs to be toned-down. Softened by requisite question mark, I believe that “we” cannot afford to not about talk about “it” (Barad, 2001, p.103)

Drawing from the first premise of our agreement on *virtual*, reality is composed - at least- by *actual* and *virtual* and this concurrence is very important for now on. *Real* or *reality* is not just a lot more than the actual or concrete, but is a whole different thing. One already infers from the *virtual* system of meanings, that it implies processes, dialectic and space-timing.

Again the *real* or *reality* is a concept that comes to matter after a long history of accumulating meanings and philosophical discussions. So it is, that those distinct positions in respect to what is *real* and *reality* have divided the human knowledge – and I think sometimes, human kind – into epistemologies, disciplines, methodologies, practices and ethics. What is out there to be known? What is included? And what is not? Are my specific ideas about real – the long accumulation of knowledge that transcends my time and space – also real? Is the

mind real? Is there an absolute real out there that categorizes nature into many levels of perception? Are fiction and fantasy real? Are representation, simulacra, imitation, hyperspace, real? Are all the very well sustained ontologies about *real*, real?

As the reader may suspect *real* is a subject matter for a thesis of its own, and I would have to crawl on the shoulders of many giants that are already on the shoulders of many other giants, on the shoulders of giants and not so big people, philosophical traditions, domestic task and everyday politics to get to an answer, that I doubt to be totally *real*. So at this stage I ask the reader to settle with me on a *reality* that is contested – by many giants and everyday people – a *real* which meaning refers to a something different – or not just to – the concrete and actual. A wholeness that involves processes, configurations and reconfigurations. In the next section I will propose a framework, *agential realism* of Karen Barad, to which I am standing to relate to *reality* in this thesis, for now this agreement will be enough.

### **Digital rendering of virtual**

Going back to the *virtual* power to generate *actual*, one makes sense of theories that argue for *virtual* rendering into digital configurations. This is memories, subjectivities, subjects, ideas, concepts, identities materialize or render within the digital mediated environments. (Hayles 199, 2001, Levi 1998, Bakardjieva 2005, Baym 2000, Campbell 2004, Jenkins 2006, Liestøl 2004, Munster 2006) and it explains how digital environments overlap meanings with *virtual* as in the sense of virtual public domain or VR. Authors advocate for this specific process of digital rendering, and have analysed virtual reality, cyberspace and later, in

web 2.0 platforms like MySpace and chats rooms, predicting processes in which our bodies render and redefine online and in the digital virtual. There is a certain tendency of suggesting – openly or not – that our concrete world of flesh and blood is in a process of losing material importance in tendency towards immaterialization while us and our identities are *materialised in the virtual* – meaning digital environments- (Hayles 2001, Van Doorn 2011).

These authors studying renderings within the digital virtual, use adaptations of social constructivist terminology, like *embodiment*, *identity performative*, *discourse*. Hayles, redefining notions into *inscription* and *incorporation* that are fed by what she calls ‘metaphoric networks’, as some sort of consensual culture of internalized discourses, that for me and for my previous consideration on *virtual*, share the same generative powers. I am not here to discuss these processes for ‘materializing in the digital-virtual’ with which I agree for the most part, but to challenge the assumption that by it, these processes equal into the loss of materiality, or even into immaterialization, as if the digital is somewhere outside of our material world.

The one aspect that interests me, and that I see as necessary to rescue for the sake of developing my own arguments on *digital public space(s)*, is the idea that somehow *virtual* and its generative power, found another realm or domain in which to render. Within the digital, *virtual* actualizes with different material system of existences; into and in between lines of code, silicon, coltan, wires under the sea, LEDs, chips and shiny metallic hardware. All of this involves accumulations of practices, expertise and knowledge; programing, Chinese adolescent girls in assembly lines working long hours for little pay, a ‘Like’ in

Facebook, Apple genius bar, kids in Congo mining as slaves, a selfie stick, Instagram editing filters, illegal African immigrants recycling technological rubbish, emoticons, £42 for the monthly contract of iPhone 6 out of the bank account for 18 months and a Tinder buzz. With these practices and knowledges come their imaginaries and meanings all merging with materialities into what is called digital virtual that is anything but immaterial.

Since the second wave of cybernetics and the popularization of the personal computer, we have been plagued by ideas about the immateriality of information, its supposed independence from any particular material substrate. Hayles (2008), revises the history of the ideology of immaterial information and bodies becoming immaterial. She argues, that pronouncements on the materialisation of information and bodies,

should be taken as evidence not that the body has disappeared but that a certain kind of subjectivity has emerged. This subjectivity is constituted by the crossing of the materiality of informatics with the immateriality of information. The very theorists who most emphatically claim that the body is disappearing also operate within material and cultural circumstances that make the claim for the body's disappearance seem plausible. The body's dematerialization depends in complex and highly specific ways on the embodied circumstances that an ideology of dematerialization would obscure. (p. 193)

Hayles then clarified her understanding of “informatics” as,

the material, technological, economic, and social structures that make the information age possible. Informatics includes the following: the late capitalist mode of flexible accumulation; the hardware and software that have merged telecommunications with computer technology; the patterns of living that emerge from and depend on



access to large data banks and instantaneous transmission of messages; and the physical habits-of posture, eye focus, hand motions, and neural connections-that are reconfiguring the human body in conjunction with information technologies. (ibid.).

Hayles situates claims of immaterialization of digital in specific cultural and material conditions, Charlie Gere (2008) created a detailed digital history concentrating precisely on such conditions, that for example changed how digital matters from the first wave of cybernetics associated with the military and with the war, to the second wave of cybernetics, in which the post-war era conditions he proposes as 'powerful concatenation of practice and theory, driven by the paradoxical combination of optimism, prosperity and nuclear terror in which theories of self-regulation combined with new technologies to give a sense of control and mastery in a complex world' (p.78). These conditions, as described by Charlie Gere, saw the emergence of fields of Cybernetics, Information theory, and Artificial Intelligence, at the same time that 'computers went from vast, unwieldy and expensive machines, requiring highly specialised knowledge to operate, to something close to the machines we are now familiar with' (p. ibid). Both Gere and Hayles conclude that this movement merges with Structuralism that dominate the humanities and that were fascinated by presume that material reality is "primarily if not entirely, a linguistic and discursive construction" (p.192).

The cultural assumption of immateriality of digital still prevails and it is well maintained to keep on obscuring the materiality of digital, for various reasons, economical, political control, human rights, marketing, ethical absolution, privacy, etc. I kept on witnessing discussions on the disruption and interference

of text and narrative in the digital, rather to acknowledge the materiality of code and coding as the language of digital. The assumption of immateriality of the digital is extended beyond to include an idea of ‘invisible forces’ of it, and using immaterial metaphors to address the digital. Recently, at the CHI conference in California, I saw someone wearing a t-shirt that read, “There is no such thing as “the cloud”, it’s just somebody else’s computer” and thought that would be the perfect way to end an argument not just on the immateriality, but on the omnipresence and neutrality, of the *digital public space(s)*.

Stephen Shaviro (2006) warns that we are ‘too dazzled by the magic of our new technologies to ask hard questions about the presuppositions that underlie them’. Shaviro continues by explaining how digital is rendering by transferences of patterns ‘both within a given medium, and from one medium to another’, however information is never ‘independent’ of its material medium and he continues:

...the medium has a great degree of influence on what patterns are possible and how they can be propagated...“information” cannot just be abstractly opposed to the medium in which it is instantiated, or across which it is transmitted. Medium and message intersect. The shape of the information transmitted within a medium, or between media, is in important ways a function of the qualities and potentialities of the medium or media in question. (Ibid. 2006)

### 1.3. *Agential realism* and how matter comes to *matter*

Thanks for bearing with me on the *real*. I am now going to present you with a framework that is at the centre of my consideration of *reality* in relation to coexistence of digital-physical and with materiality at the core. *Agential realism*

presents theories of becoming and theories of knowledge; in this sense it is both ontological and epistemological. It proposed and tested a diffractive methodology that integrates affection and responsibility.

Barad (2007) explains through *agential realism* generative relations of beings and matter, not just as a way to understand reality but to position us in it attempting to figure it from within, shifting and troubling the researchers position, it's object and the identities of both.

I propose "agential realism" as an epistemological-ontological-ethical framework that provides an understanding of the role of human and nonhuman, material and discursive, and natural and cultural factors in scientific and other social-material practices, thereby moving such considerations beyond the well-worn debates that pit constructivism against realism, agency against structure, and idealism against materialism. Indeed, the new philosophical framework that I propose entails a rethinking of fundamental concepts that support such binary thinking, including the notions of matter, discourse, causality, agency, power, identity, embodiment, objectivity, space, and time. (Barad, 2007, p. 26)

*Meeting the Universe Halfway* is one of these books that requires quality time, space and attention. If you are in the lucky position to offer what it asks, something amazing happens; you read it while it reads you. It goes in circles and in iterations, through time I learned to make sense of the music in its whispers. Carrying the book everywhere in Lancaster, my new campus, provoked the most amazing encounters; it opened conversations that led to long coffees, and warm discussions with incredible people with whom I ended up co-writing, co-presenting and co-dreaming. It connected me with the very important and warm community of techno-science feminists based in Lancaster. The discussions there

became the rich compost for this project. My copy of Barad's book is filled with notes, page markers of all colours, which I naively used to colour-code while the book was troubling all possibilities of coding or categorizing. It was not a reading, it was a re-working, a reshuffling of my self. We finished with each other with the poem in its last pages; I knew then the book would hold my hand for the rest of my journey, and that it was just the beginning.

Its emphasis on *materiality*<sup>10</sup> and the rethinking of binary differentiations encompassed with the three motivators that from the very beginning led me to think of *dps* as something more than a proposal to develop archives. Firstly, it is a principle of coexistence; digital-physical, public-private, space-place. Secondly, the prominence of its *materiality*, the same *materiality* that the cyberspace worked so hard to hide, and lastly, its *something else* that is in its matter. For this 'something' I am positing the term *in-matter* which I elaborate in Chapter 3. *Dps* as a system of existence with technology needed to be figured with another way of thinking and doing and so my encounter with *agential realism* was love at first read.

Barad's *agential realism* is based on a definition of *material* as "things in themselves, not things behind phenomena, but "things-in-phenomena", a "phenomena as non dualistic whole" (2001, p.104). *Agential realism* understands reality as different from ideal, human-independent reality. *Agential reality* takes into account agency (human and non-human), practices and concepts of reality.

To formulate *agential realism* Barad encompasses synergies between quantum physics and feminist social constructivism within an ontology that conceives

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<sup>10</sup> C. Inventory 1.

reality becoming in the configuration of space, time, meaning and matter becoming together, not as cause of pre-existing entity(ies) but because their becoming. Barad draws on the work of Niels Bohr's quantum theory, to consider agencies of concepts and ideas, apparatus of knowledges and practices of experimenting into shaping a *reality* that is evolving from and because these agencies; *agential reality*.

*Agential reality* then, is the sediment out of the process of making the world intelligible through certain practices and not others. We are not just responsible for the knowledge that we seek, but in part, for what – literally – exists.

*Meeting the Universe Halfway* is one of the key texts within the emerging field of new materialism and more specifically from the techno-feminist materialism. More than a field, it is a movement that transverses across fields, attempting to reconfigure traditional rigid dualisms, persistent dichotomies of nature-culture, body-thought, concrete-abstract, subject-object, etc. It is concerned with a series of questions and potentialities that revolve round the idea of active, agential and shape-changing; self-differing and affective-affected matter. New materialism moves from a human centred perspective to focus on a more post-humanist view, concern with make less emphasis in the power of language only, and systems of cultural representation, to investigate forms of post-representationalist sociotechnical analysis.

While I agree with many authors representative of new materialism,<sup>11</sup> I am going to exclusively concentrate on Karen Barad's *agential realism*, as I feel it proposes

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<sup>11</sup> (Bennet 2004, 2010; Braidotti 2013, 2002; Sara Ahmed 2006; Frost 2011; Kirby 2011, 1014; Van der Tuin & Dolphijn 2010, 2012; Connolly 2013, Coole 2005 and more oriented to arts and media studies Barrett & Bolt 2013 and Parikka 2012).

a system for knowing and becoming, thinking and doing that also integrates affection and ethics in its core. The onto-epistemo-methodological proposal was inspiring, moving me with an enthusiasm that I did not find in other key authors of the new materialist turn, even though they share similar presuppositions.

In what follows, I am going back to the colour-coded pages – It was not so useless after all – looking to sum up some key notions and terms of the Baradian framework that I want to adopt in my purpose of figuring *digital public place(s)*. This is complicated task because Barad's terminology is an *entanglement*<sup>12</sup> that goes against a linguistic representation. I am momentarily and artificially disentangling this terminology in order to prepare the reader for a language that recurs my thesis which itself proposes a different way of reading.

With the same logic, this is not a complete and delimited theoretical frame of work; Baradian thought runs transversally across the arguments of this thesis from the centre expanding through out of conceptual, practical and narrative interferences.

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<sup>12</sup> C. Inventory 1.

## Inventory of words that matter n.1

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Things do not have inherently determine boundaries or properties, and words do not have inherently determine meanings. (Barad, 2007, p.138)

This is just starting to pack and unpack the Baradian framework, which is diffracted in her book (2007) and more recent publications. However, this compilation comes from 'Chapter Four: Agential Realism: How Material-Discursive Practices Matter' (p.132-185)

- *Matter, materiality*

Language matters. Discourse matters. Culture matters. There is an important sense in which the only thing that doesn't seem to matter anymore is matter. (Barad, 2007, p. 132)

*Matter* is considered not in its stable and fixed surface and concreteness but extended to refer a complex, dynamic, unstable set of on-going generative relationships *mattering*.

*Materiality* is the mere possibility of *matter* and *mattering*, is what *matter* does. It is the inexorable, *intra-active* relationship of *matter* and meaning, practice and *discourse*; how one makes sense of things, ideas, concepts, meanings and practices, have material substance, do actually matter.

- *Intra-action*

Intra-action signif[ies] the mutual constitutions of objects and agencies of observation within phenomena (in contrast to 'interaction', which assumes the prior existence of distinct entities). In particular, the different agencies ('distinct entities) remain entangled. (Barad, 2007, p.197)

*Intra-action* is considered as the inseparability between objects, subjects, *discourses* and *apparatuses* of observation (and agencies of observation). *Intra-action* opposes the uni-directionality of 'interaction'. *Intra-action* opposes the human tweaking its pre-existing, inert, neutral things. *Intra-action* emphasises humans and things becoming together through on-going generative encounters. It emphasis, not the force in between, but force within the enactment of sociotechnical encounters and merges boundaries of all agencies involved.

intra-actions enact agential cuts, which do not produce absolute separations, but rather cut together-apart (one move). (Barad, 2014, p.168)

- *Discourse*

*Discourse* is involved in the *intra-active materialization*. Barad draws on post-structuralist notion of *discourse* as different from *language* and as a system of representation, of representing knowledge. *Discourse* is about construction of knowledge through language: 'not a group of signs but practices that systematically form the objects of which they speak' (Foucault 1977, p. 49)

*Discourse* constructs the topic, defines and produces the objects of our knowledge: 'It governs the way that a topic can be meaningfully talked about and reasoned about. It also influences how ideas are put into practice and used to regulate the conduct of others' (Hall, 2006, p. 72). Foucault claims that *discourse* loses, merges, the separation between words and things. He affirms that discursive practices bring about rules that define not the dumb existence of reality, nor the canonical use of vocabulary, but the ordering of the objects'



(1977, p. 49) and explain how “words and things” is as well the title of the whole problem of discourse practices.

- *Performativity*

Performativity is considered as a practice that takes the *discourse* into the creation of reality. Post-structuralism and feminism theorists, in particular, well articulated by Judith Butler (1990; 1993), have largely explained subjectivity, gender and bodies using theories of *performativity*. It extends Foucault’s conception of re-acting internalized discourses. Barad uses *discourse-performativity* too, not just to consider how subjects come to matter but how matter, matters too. The point of separation of Barad from Butler and Foucault is that Baradian *performativity* considered as ‘agencies regulatory of knowledge power’, are not exclusively human, these practices of authorizing are also performed and enacted by things and *apparatuses*.

Barad understands *performativity* as a *material-discursive practice*, According to Barad, the ‘performativity account insists on understanding thinking, observing, and theorizing as practices of engagement with, and part of, the world in which we have our beings’ (2007, p. 133) adding that *performativity* incorporates into the descriptions of the reality, ‘matter, doing and actions’ (ibid, p. 135). In the intersection of post-structuralism with quantum theories of physics, Barad relates *performativity* with Bohr’s *agency*. Barad proposes *agency* as “post-human performativity” or *the agency performed by apparatus* and non-human matter.

- *Concept and Apparatus*

Barad draws on Bohr's ideas of the *agential concept* – similar to Foucaultian discourse – in which *concept* is the incorporation of accumulated knowledge that affect practices of observation and is not exclusively in the observer but also imbedded in *apparatus*. *Concepts* have generative power over the things that they are concerned with.

In terms of media studies this resonates with theories that collapse the materiality of the medium and its messages and practices of communications. At this point, Barad totally got me, I felt compelled to elaborate a whole theory of *digital public space(s)*, based on her *apparatus* significations, in fact, by playing a game of changing the work 'apparatus' for '*dps*' and one could have a strong argument of *dps* as new media.

1) apparatuses are specific material-discursive practices (they are not merely laboratory setups that embody human concepts and take measurements); 2) apparatuses produce differences that matter — they are boundary-making practices that are formative of matter and meaning, productive of, and part of, the phenomena produced; 3) apparatuses are material configurations/dynamic reconfigurings of the world; 4) apparatuses are themselves phenomena (constituted and dynamically reconstituted as part of the ongoing intra-activity of the world); 5) apparatuses have no intrinsic boundaries but are open-ended practices; and 6) apparatuses are not located in the world but are material configurations and reconfigurings of the world that re(con)figure spatiality and temporality as well as (the traditional notion of) dynamics (i.e. they do not exist as static structures, nor do they merely unfold or evolve in space and time). (Parikka, 2009)

However, in figuring *digital public space(s)*, my task is beyond finding the perfect theory that describes its main features, nonetheless this is a good start.

- *Entanglements and boundaries*

On-going dynamics of intra-activity mean instability of the boundaries and deeply connected ways in which everything is *entangled* with everything else, meaning that any act of observation makes a "cut" between what is included and excluded in what is being considered. Nothing is inherently separate from anything else, but separations are temporarily enacted and materially performed so that one can examine something long enough to gain knowledge about it.

To be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent, self-contained existence. (2007, p. ix)

The study of *apparatus*, as entangled practices, embedded agencies and matter, leads us to the problem of boundaries. If we agree that the material is not limited to its surface but extended to its agency, that it is also entangled with our agency and with ourselves, constituting *intra-active* wholeness. It is impossible, therefore, to study any stage as completely separate from another, the mere presence presuppose the absence of all the other entities that even equally *intra-active* have been left out of the material practices of observation, that is way Barad understand boundaries as the material enactments of differentiation.

The entanglements that Barad enacts are not just a descriptive idea of phenomena, its whole framework is entangled and I became irremediably entangled with it too. That is why this exercise of dismembering all the terms apart, is an artifice that is not in any part of Barads work. I temporally enact it in

this way, so the reader and I keep on developing this common language useful for practices of *digital public space(s)*.

- *Diffraction*

“Diffract to break apart, in different directions (as in classical optics).

Diffraction/intra-action – cutting together-apart (one move)...”

(Barad, 2014, p. 168)

This Baradian view of knowledge provides a framework for thinking about the ways that discourses, concepts, and practices of thought can make some things visible and other things easier to ignore or never seen. Representations, when understood as meaning and content, are more attainable to us than the things they are representing. The tendency is to assume that the representation is the whole phenomenon, but the representation includes certain aspects of the observation and it is not the phenomenon in it. In between the representation and what represents will be always a gap. Barad takes on Donna Haraway (1992) by proposing and actually testing *diffraction* as a performative method concerned with patterns of difference and resonance. It is about bridging the gap. Barad defines it as “*cut together-apart (one move)*”, which more than idea is a move that brought together as much of feminists studies of the difference as quantum studies of light. (Barad 2014, p.168)

The overall proposal of Barad is to overcome systems of representation with her proposal of performativity. I took the challenge of Barad and Haraway to test my version of the diffractive methodology to figure *digital public space(s)* in the making, I am going to elaborate on *diffraction* and my take of it in the chapter that follows.

Chapter Two -*body-tool (dis)continuum.*  
Thinking *in* methods about dps

## 2. *Body-tool (dis)continuum*

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### - thinking *in* methods about dps

This investigation has an ontological side; how one becomes with things and with others within *digital public space(s)*. I advance that *dps* are changing paradigms in an emerging domain and is enveloping qualities of reality, of people and things that cannot be explained, approached or measured with the same traditional representational systems. *Dps* phenomena are reconfiguring ideas, practices, knowledges and ways to learn, and therefore require a reconfiguration of concepts too. In this sense, this project is also epistemological, with a material-discursive approach. Reconfiguration of concepts allow description, analysis and generation; tools to make sense of practices, to relate with and, build into *dps* phenomena in its own terms, inspiring methodological designs. I propose Barad's *diffraction*<sup>13</sup> as the inspiration for my proposal of a methodology specific to work collaboratively in creative practices within *digital public space(s)*.

The emphasis is on *materiality*, on the tangible and non-tangible that is within matter -or *virtual*- nature of the experience, on creative processes and encounters. By recognising *digital public space(s)* as a catalyst of creativities and narratives, the inspiration of this investigation is that by *figuring, configuring* and *re-configuring*, new methodologies are informed. In this sense, this is a methodological project too.

Across the project, and while doing my thesis, I was incessantly thinking *in* methods about the discursive-material enactments that make the difference and

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<sup>13</sup> C. Inventory 2.

the boundary-less *dps*. I was, at all stages, trying to imagine ways of shaking methods off. In this thesis I am making an exercise of thinking and writing, making and relating with *dps* in a *diffractive* manner. In the Creative Exchange projects, methodologies were co-created or emerged from practices of collaborations, and usually were a combination of methods that responded to the combination of disciplines that the project involved.

Each CX project had its own story. In each of them, my role varied. I started to consider these collaborative projects as agential living entities. Each of the partners contributes with their particular expertise, but also with their particular imaginaries, expectations and interests. I found myself in then with a double role, on one side; I was as another co-investigator. The other role is more difficult to articulate but let me have a go; I was there almost as a CX producer, attentive to how collaborations happen, taking care of encounters and how relations *click* and spark. I designed events and dynamics that allow for these collaborations. I facilitated activities and workshops. However creative exchange does not agree with too much facilitation, neither with over production, over designed dynamics. The most important thing about this role in the Creative Exchange was, that this living things that were the projects, could develop their own life.

The *body-tool (dis)continuum* narrates my thoughts on methodologies and methods, and how I get to structure this thesis like I did while I was designing methods for encounters. In this chapter, I am going to concentrate on the position of the researcher, the body of research and methodological tools according to diffractive theories. Firstly, I am going to introduce my take on

diffractive methodology, and then I am going to describe the design of an activity for Creative Exchange. The stories of the encounters in CX projects will appear in the chapters that follow.

## 2.1. Diffraction as epistemo-methodology

In the last chapter, I look into *digital public space(s)* genealogical tree; The Creative Exchange, AHRC Knowledge Exchange Hubs for Creative Economies, BBC Archive Development and the current literature of *dps*. From that mix the ideas of *digital public space(s)* is mattering in the configurations of theories, political interests, institutional disposition, experiences, behaviours, aesthetics, practices, technologies and stuff –wires, screens, paper prototypes, lines of code, doodles in the corner of the page. Meaningful, like a song, a memory, a photograph, a warm friendly hand or mundane things, like streets, pans, toys, dust and coins (oh coins and many bills!). In essence *dps* stirs up inherited retro-cyber promises and shiny novel dreams of what is possible, scheduled possibilities and programmed needs that are urgent to satisfy, practicalities of commercial interests and symbologies of contestant fantasies. All *entangled* configuring a sociotechnical *assemblage*<sup>14</sup> emerging from a specific historical situation. I want to make sense of these matters by making them go through *digital public space(s)* notion as *interference*<sup>15</sup> (Watts 2007)

My research explores a take on Barad's (2007) *diffraction to cut-together-apart digital public space(s)* into *(dis)continuums* (see Interlude) as a method to exploit further capacities of the visual physical figure as an analytical and generative tool. The *body-tool (dis)continuum*, is about the impossibility of separating our

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<sup>14</sup> C Inventory 2.

<sup>15</sup> C. Inventory 2.



body from our tools and what we know about reality through them. The *body-tool (dis)continuum* refers to the non-existence point of distinction between body, apparatus and practices, and the researcher's imperious need to still mark it somehow, with methods. Episteme refers to the 'body' of ideas that determine knowledges, and methodologies, to tools with which we construct or shape certain bodies of knowledge. In that sense, the *body-tool (dis)continuum*, presents the researcher's body, the research 'body' and analytical tools as being part of each other, is about that continuity and about the discontinuity of enacting the difference, its separation. In this section I am *cutting-together-apart* me, my research, a body of ideas and methods.

This chapter is about encounters with knowledge(s), encounters that are not independent of our agencies and agendas, ethics and politics of our practices of construction and reproduction of these knowledges (and not others). What happens when one's position as researcher reflecting about a phenomenon from a far, not even near enough but rather becoming within it, as an inseparable and fundamental part of it? I want to rescue the carnal disposition to procreate facts of existence; I want to emphasize the indistinguishable condition of (artificially made) boundaries, the unsettling difficulties of practices of outlining entangled and overlapping categories and mediations. I am especially interested in the *in-betweenness* of categories and what is left apart, what does not fit. My research sets out a take on Barad's (2007) *diffraction* to *cut-together-apart digital public space(s)* into *(dis)continuums* a method to exploit further capacities of the visual physical figure as an analytical and generative tool.

## Body of knowledge

My epistemological stand, the body of theories of my investigation, is not contained in one section of the thesis, I *diffracted* it throughout all the *(dis)continuums* which are elaborated in each of all chapters. *Agential realism* was introduced in Chapter One. In the section that follows I continue its reiteration with emphasis now in its epitemo-methodological strands. According to *agential realism*, reality is dynamic, unstable and depends on us to be defined. Introducing agency (human and non-human) to reality is a distilled manner of resuming the arguments of Barad's theories.



Figure 3 Hyvä käytös (2008-2010) @ <http://www.iiususiraja.com/galleria/hyva-kaytos/>

Ideas that challenge the distance of the knower to its object of knowledge, notions of knowledge dependent of the knower and mechanisms of knowledge making and the proposal of knower and knowledge as a unity, or continuum, have long philosophical precursors both in scientific and social disciplines.

*Diffraction* as a tool is inspired directly by the physical metaphor, but its epistemological antecedents are in disciplines of science, social science and the arts. Deleuze (1992) and Foucault (2002) on 'The Archaeology of Knowledge' and also Butler (1990) have challenged the separation of knower and knowledge. In distinct but related domains Latour (1993) talked about networked relations and distributed agencies with theories of hybrids and quasi-objects. STS and FSTS scholars Harding (1991) and Keller (1985) have contributed with themes of strong objectivity, dynamic objectivity, and Longino (1990) on contextual empiricism. All of these discourses revised the power relationship of the knower over the thing to be known. The historical linearity with what the argument was built is narrated at greater length in chapter one of Barad's *Meeting the Universe Halfway* (2007, p. 39-70). I am going to dedicate instead, to giving a more detailed account of the texts that have inspired my strategy rather than its antecedents.

Haraway's ideas of 'Cyborg' and 'Situated Knowledge', were for me a call to action and made me rethink practices of knowledge. The Cyborg myth is the manifestation of three main levels of boundary breakdowns (1990, p.153); human-animal, human-machinery and the boundary of physical and non-physical. Cyborg, for Haraway, challenges with 'partiality, irony, intimacy and perversity' dualisms and polarities of private/public, self/other, mind/body, culture/nature, male/female, civilised/primitive, right/wrong, reality/appearance, whole/part, agent/resource, active/passive, God/man, etc. Cyborgs, in Haraway's words, are 'wary of holism and needed for connection' (1990, p. 151).

Cyborg is about 'transgressed boundaries, potent fusions, and dangerous possibilities' and the 'erotic power' of creating knowledge in our encounter with it (ibid.). In accepting the invitation, my research includes rescued pleasures of *writing up* as non discreet method, a tool that dangles, forming a space between myself on one side and otherness at some point around it. *Writing up*, in a way that acknowledges my voice, but also the practice of *writing up*, my fingers in the keyboard, a rhythm, that I propose a way of, as researcher, extending my hand to access otherness somehow more sincerely. Haraway, writes about understanding the unity from the inside, asserting that the antithesis of man-nature and man-machine, was a manhood invention. Haraway calls for practices that reinvent those relationships by realizing and making real, by standing on the inside and trying to understand its capabilities (1990, p.80).

Other feminist voices would sing along with the destabilizing ideas of body boundaries, and differential dualisms in between body and soul, masculine and feminine, in and out, objective and subjective and the critique of philosophical constructions of binary differentiations. These voices are going to be always present, always inspiring my research, informing the structure and what it means to commit with *diffraction* as tool for knowing. Elizabeth Grosz (1994) in the chapter 'Refiguring Bodies' of the book *Volatile Bodies: Toward A Corporeal Feminism*, does a transversal tour along side the philosophical history of knowledge and how such dualisms were established.

Grosz denotes that dichotomous thinking, or 'bifurcation of beings' as she calls it, is not neutral neither objective. It necessarily hierarchizes one term over the other and the last one will always be the denial, the subordinated or, the negative

counterpart. The first term defines itself at the cost of repudiation of the other and the privileged term will constitute its boundaries around expelling the other (1994, p. 3). Grosz argues that categories and boundaries are always about perpetuating power relations, always loyal to the dialectic of discriminations and separation. Grosz proceeds to make an account of the evolution of dichotomies and oppositional pairs in the history of philosophy. She references the arguments from Plato's distinction of reason over body, a notion that elevates consciousness to an independent level of nature, leaving bodies and the physical world as mere inert containers of more uncontaminated concepts. This first constructed separation will consolidate all subsequent Western epistemology.

Descartes achieved the separation of body and soul, continues Grosz (1995, p.6), and the idea of substance and matter triumphed. The separation changed our positions in relation to knowledge. The separation supposes a personal elevation of mind from the direct material reality in order to connect with a consciousness that is exiled from the natural world and is beyond and above of our own experience. The knowledge that we seek in that separation will be about the science of the governing principles of nature, a science that excludes and is indifferent to the considerations of the subject. Grosz continues, 'Indeed, the impingements of subjectivities will, from Descartes's time on, mitigate the status and value of scientific formulations. Scientific discourses aspire to impersonality, which it takes to be equivalent to objectivity and is instituted the political division of knowledge object and subject.' (1994, p. 7)

Cartesian dualism, Grosz continues (p.9) is responsible for the historical separation of the natural sciences from the social sciences and humanities,

physiology from psychology, the quantitative analysis from the qualitative analysis and so on. The idea of transgressing boundaries and proposing continuums (discontinuous) is to bridge back the Cartesian dualisms that as Grosz explains are intrinsically incorporated in the practices of knowledge.

Imagining, thinking *in* methods that object to categories and separations, I found it useful to approach *digital public space(s)* phenomena with *(dis)continuums* instead of categories rigidly inserted within a certain set of a pigeon hole structure. By figuring *dps* as the prism granter of problematisation and interference, I begun to figure, *dps* as operational axiomatic of *digital-physical*, *public-private*, and *space-place (dis)continuums* that *assemblage* tools and bodies in artifices automaton-like:

It is well-known that an automaton once existed, which was so constructed that it could counter any move of a chess-player with a counter-move, and thereby assure itself of victory in the match. A puppet in Turkish attire, water-pipe in mouth, sat before the chessboard, which rested on a broad table. Through a system of mirrors, the illusion was created that this table was transparent from all sides. In truth, a hunchbacked dwarf who was a master chess-player sat inside, controlling the hands of the puppet with strings.

(Walter Benjamin, Project Arcade, 1982)

To sit in the middle of the entanglements of tool, body and knowledge is problematical: how to make sense of the whirlpool when we are trapped in it? If I get rid of categories and labels and methodological divisions what is left? A poem, a pamphlet, a love letter, a song? Once agreeing intellectually with the episteme of entangled, enacted boundaries and intra-active connections, how does one take over the job? Where to start knitting with a thread without

beginning or end? When I find myself in such whirlpools, Walter Benjamin's figure of *constellations*<sup>16</sup> has illuminated me while making sense of the loopy swirls that the body –of knowledge- and tools –of analysis- *(dis)continuum* has left me in.

*Constellation* is, again, another, analytical and generative form of *figuration*. Proposed by Walter Benjamin (1982) in the *Arcades Project*, it was written between 1927-40. The text collects Benjamin's thoughts and extracts of fragments of classical literature during thirteen years and travels of his expatriation and accompanied his death. The textual cabinet of thoughts was looking to reconfigure, capture, conjunct, possible combinations and correspondences, linking points far from each other but closer in a bigger picture. In the *constellation* some lights seem nearest to one another but may prove to be those furthest apart. Distance gives way to proximity in Benjamin's *constellations*, a critical figure constituted by a plethora of points, which together compose an intelligible, legible and transient, pattern. (Gilloch, 2013, p.234).

Each *constellation* must be appreciated as only one permutation among an infinite number of possible *configurations*. A *constellation* might be inserted within other potential *constellations*,<sup>17</sup> other readings. One is then able to connect the luminous dots and flatten down the rather three dimensional firmament into an image, and it is that image's meaning that will accompany the sailor in the darkness of the night. Benjamin compares 'Origin' with the idea represented through the reconfiguring of actual phenomena to an astrological constellation, which simultaneously groups together and is revealed by the

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<sup>16</sup> C. Inventory 2.

<sup>17</sup> For interesting approach to Benjamin's Constellation as Method C. Araujo (2007)

cluster of individual stars (Rollason, 2002, p. 267). ‘The Origin’, that I must understand as knowledge, is for Benjamin something subjected to a process of “becoming and disappearing”, and therefore only partial and incomplete: ‘Origin is a whirlpool in the river of becoming, and swallows up the genetic material in its rhythms’.<sup>18</sup>

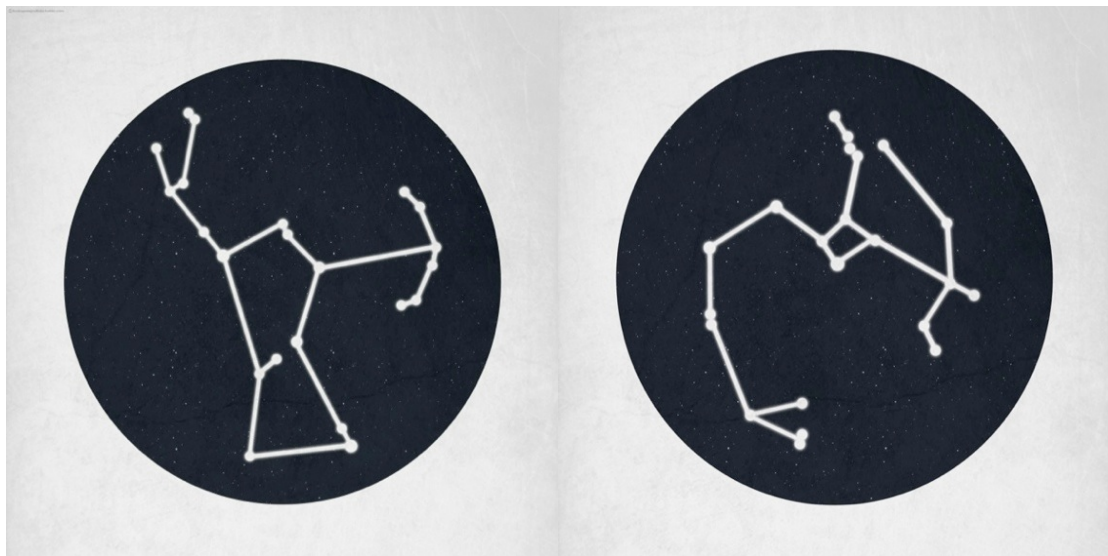


Figure 4 Images from ‘It’s OK to be Smart’ Blog<sup>19</sup>

I retain the idea of knowledge as becoming and disappearing, and relate with discontinuous continuum, *(dis)continuums*, I propose. Benjamin’s *constellations* made me think directly in the relative – wanton procreative - relation of the knowledge seeker with respect to the *constellation*; if its position changes the constellation may not be seen, but instead another pattern will be formed with the new perspective. The only way that the seeker is able to recognize the new pattern is by previously knowing it, and in fact, projecting it to configure stars accordingly. Still, constellation is a far away arrangement, Benjamin used the

<sup>18</sup> Stanford Encyclopaedia of Philosophy <http://plato.stanford.edu/entries/benjamin/> [accessed 14/7/14]

<sup>19</sup> <http://www.itsokaytobesmart.com/post/44685969165/constellation-minimalism-from-the> [accessed 18/10/14]



metaphor of “theatre of thoughts” to describe his Arcade Project, implying representation and separation, observation. I propose to meet the distance. What interests me are practices of configuring and reconfiguring connections. What I intend is to be part of the stellar performance on that theatre’s stage, imagine how the constellation would be seen from the inside, considering that our own splendour is part of the shape that is been creating.

Diffractive analytical tool works assuming one as part of the constellation, as another flickering point. Following the simile my proposal is to perform on Benjamin’s theatre stage and get the chance, at least, to guess in between the shadows and the lights of the audience, the myriad of complexities and individualities of a much bigger public. Still I am saving the metaphor of the constellation as an exercise that reminds me of the tri-dimensionality and rhythm of the whirlpool-encounter with knowledge.

### **Analytical tool**

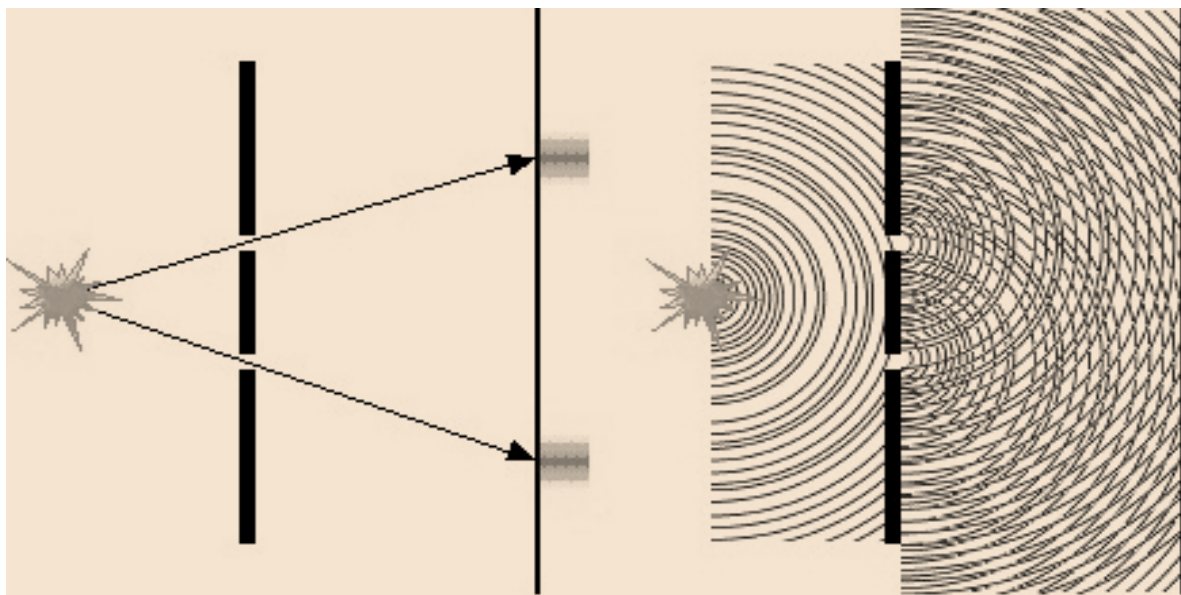
Barad’s epistemo-methodological proposal was inspired by Bohr’s studies of the physical behaviours of light, which formed the foundations of quantum physics. Quantic experiments proved that light – as well as matter – behaves under certain circumstances as particle and under different circumstances as wave. It was proven that light behaves as particles, and it is possible to establish how these light particles travel, their speed and qualities by observing their reflection on a flat screen. But equally light can behave as a wave and it can be proven using the diffraction experiment. Light is, then, wave and particle, as it will behave as a particle when it is measured as a particle and will behave as a wave when is experimented as diffraction. This means light is both particle and wave,

until the experiment is exercised. But light cannot be proven as particle and wave at the same time, as the two experiments cannot be exercised at the same time. What is implied is that the phenomena will change qualities depending on the qualities of the experiment, the measuring tools and the researcher. Until these things are established, identity is all the possibilities.

### **The Double Slit Experiment: Quantum particles, quantum waves and the measurement effect**

If light consists in particles

If light consists in waves



*Figure 5 Image from 'The Reality Programmed' Blog by Ross Rhodes<sup>20</sup>*

Methodologies of reflection use metaphors derived from the terms of light reflection, for example 'vision', 'observation', 'representation', 'description', 'reflection' 'outline' 'draw conclusions', and will always situate the phenomenon as if on a flat screen. Inevitably, some parts – whatever is not on, or cannot be captured by, the screen – will be left out. The reflection tool situates the observer

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<sup>20</sup> <http://www.bottomlayer.com/bottom/reality/chap2.html> [accessed 18/10/14]

as separate to the phenomenon, and the phenomenon independent from the observer.

Reflection aims to perfect a language (mathematical, pictorial, spoken, written, coded, etc.) that most closely translates the phenomenon for the purposes of understanding. However, in the process of “selecting” and “reproducing” it into a legible discourse, we unavoidably leave some aspects behind; the unknown which is itself unknown. One curates according to its subjectivity, knowledge, gender, historical and sociological conditions, but there will always be a gap between the form of representation and what is represented (Law, 2004).

**Reflection and observation is about sameness, and mirroring.**

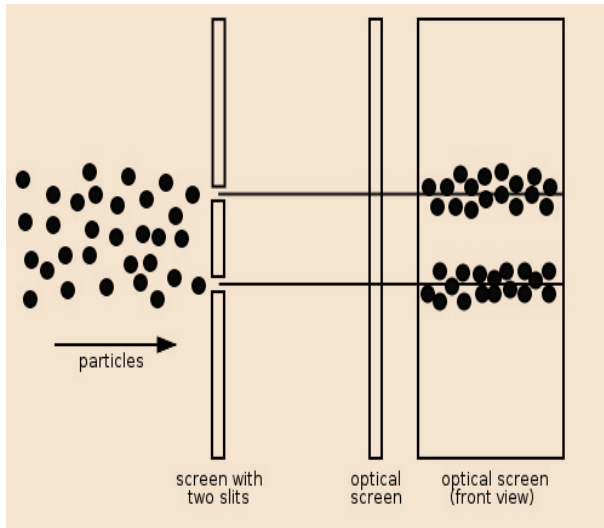


Figure 6 Expérience des trous d'Young avec des particules



Figure 7 Narcissus. Oil painted by Caravaggio 1597-1599

**By contrast, diffraction is about patterns of differences and resonances.  
It is about bridging the gap.**

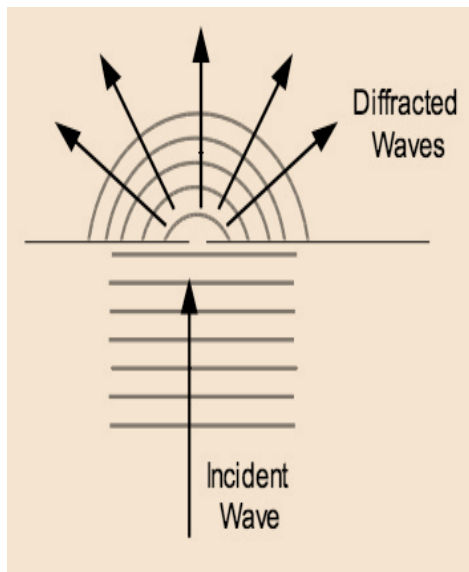


Figure 8 wikipedia commos:  
*Expérience des trous d'Young avec des  
particules*

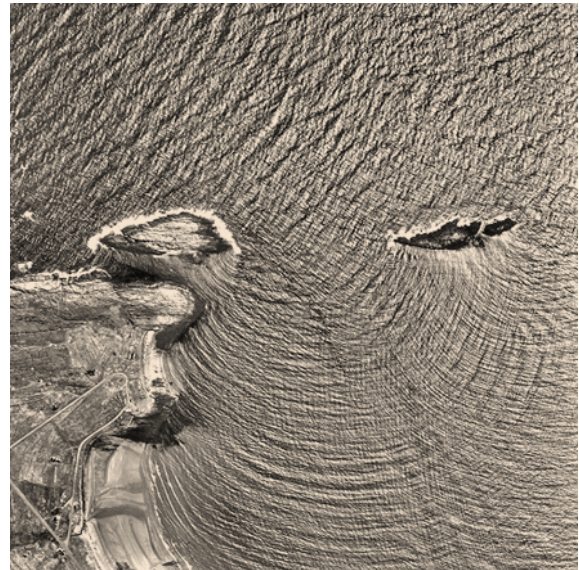


Figure 9 Interference and diffraction of sea waves  
<http://www.solitaryroad.com/c1036.html>

According to Barad (2007) observation makes a "cut" between what is included and excluded in what is being considered. Nothing is inherently separated from anything else, but separations are temporarily enacted so that one can examine something long enough to gain knowledge about it. Representations, when understood as meaning and content, are more attainable to us than the things they are representing. The tendency is to assume that the representation is the whole phenomenon, but the representation includes certain aspects of the observation that are not the phenomenon in it. Reflection then, has reigned without opposition in the vast kingdoms of intellectual thoughts, in science and humanities, as a way to seek and gain knowledge. Reflection is, understandably, the guarantor of objective distance from the phenomenal arrangements of experience. To be in the middle will disrupt the linearity of intellectual thought,

will shorten our vision but will emphasize other senses and the connections with others.

*Diffraction* as methodology uses the physical metaphor to understand phenomena, and has to do with resonances, interactions and interferences, with the multiple and the unstable stories. It is a method that aims to include what is left behind, looking at versions of the same phenomena and localizing patterns and differences, continuities and discontinuities. It is not interested in reproducing the “true story”, the scientifically provable, the ultimate version, the most adjustable theory or the absolute, god-like answer to the question.

Haraway (1992, p. 298) encourages *diffraction* as sustaining the work of critical practice and approaching topics that contain various disciplines, arguing that it is about the “heterogeneous” and not to do with “displac[ing] the sameness elsewhere”. *Diffraction* is about “patterns of difference that make a difference” (Barad, 2007, p.72). It is at the same time an analytical tool and the phenomenon itself. By approaching the phenomenon diffracted, one is studying itself as part of it; the knowledge encounter is simultaneously one’s part and part of the phenomenon, and as such requires some form of action and practice; *performativity*.<sup>21</sup>

My research appropriating *diffraction* is about making a difference. My role is not to describe *dps* phenomenon to its highest degree of accuracy possible, but rather to bring together interpretations, imaginations and speculations, to localize patterns through encounters with knowledge and with others. Mapping

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<sup>21</sup> C. Inventory 1.

ways to better create, design and relate with what we are practically realizing and making real as *digital public space(s)*.

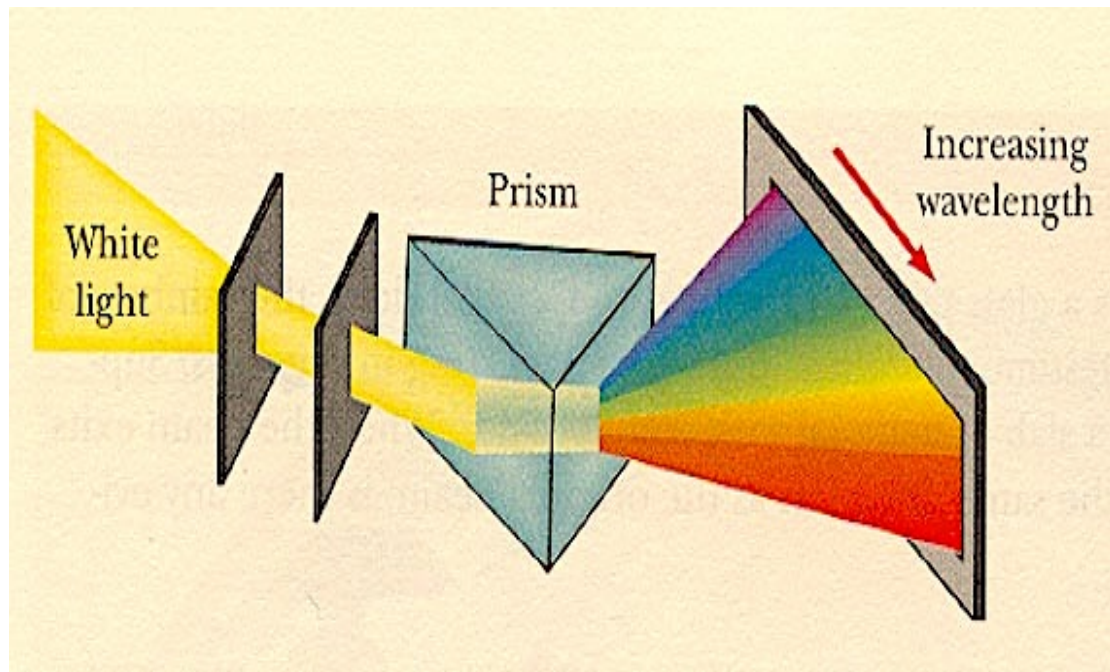


Figure 10 From blog 'Elyonism and ancient and modern word view'<sup>22</sup>

The proposal is to intersect the representational system triad: knower, representation, and an independently existing entity to be represented (Barad, 2007, p.44-45). I see my roles in the research not as an observer but as a performer, a part of Benjamin's constellations, located inside the arcade, at the stage of the theatre of thoughts. The diffraction methodology assumes my agencies, practices and actions within the research.

The investigation is not practice-based, does not use practices as vehicle. It is not practice-lead, does not use practices as way to demonstrate certain arguments. In the investigation I propose my practice as a prism, which at the same time interferes, cuts, and opens up *(dis)continuums*. The making and discursive practices are *entangled*. One is part of the other. *Diffraction* is to do with our

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<sup>22</sup> <http://elyonism.org>

relation of body of knowledge, with the tools we use to make sense of these knowledges and with being in action; the price we pay to interrupt the representational triangle is of the political currency, is not innocent but guilty of agitations.



Figure 11 Diffraction of Light. From the Conversation Blog by Andrew W. Wood<sup>23</sup>

*Diffraction* works by localizing existing patterns of representing phenomena, seeing each of them not as a category but as a *(dis)continuum*, conscientiously dissolving the gap between the observer and the observed, purposely disturbing power-perpetuating dichotomies. I am proposing *(dis)continuum* as methods to figure and to structure my project. I begin to realize and make real, *dps* as operational device that allow for investigation of *digital-physical*, *public-private*, *space-place*, as *(dis)continuums* of the *dps* phenomenon and testing proposal of Haraway and Barad applicable in practical landscapes.

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<sup>23</sup> <http://theconversation.com/explainer-what-is-the-electromagnetic-spectrum-8046>

Barad proposes *diffraction* as ‘ethical onto-episteme-methodology’. This is an invitation to test *diffraction* in different fields and in different ways, because it is to do with “differences” and “differences that make the difference”. It is a model that addresses ontologies, epistemologies, social theory, methodologies, methods and ways of using language.

For instance, some scholars have diffracted Barad with other philosophies to elaborate on ontological positions, most commonly Object Oriented Ontology, Anthropocene, Speculative Realism and Post-humanism. Iris van der Tuin (2014) diffracts Object Oriented Ontology and the New Materialism of Barad, diffracting ontologies and scholarly encounters, in her case, diffracting her own work with Morton, and Chantal Chawaf, *Diffraction* as a technology to find partings, encounters and differences that matter. Other uses (Sehgal 2014; Taylor, 2016) aim to read diffractively and bring in the gap, using the difference creatively, but still concentrate on ontological matters. Birgit Mara Kaiser and Kathrin Thiele (2014) join to the diffraction proposal as a technology of think, read, write; being and becoming in social criticism. *Diffraction* is also used in ethics. Thiele (2014) advocates for the ethos of *diffraction* through Bracha Ettinger’s matrixial idea of subjectivity-objectivity borderspace.

Baradian *diffraction* has inspired methodologies of theoretical work across different disciplines, most commonly in Comparative Literature (Kaiser 2014), Community Psychology (Langhout, 2016), Education and in the field of professionalization and professional learning (Nicolini and Roe, 2014; Ceder 2015, 16). For example, *diffraction* has been used for pedagogy in the context of interdisciplinary art practice (Hickey-Moody, Palmer and Sayers, 2016).



*Diffraction* addresses the epistemological move from the perspective that the phenomena is one (e.g. a real, stable ontology), and that the knowledge of the phenomena is multiple (e.g. multiple epistemologies) to the multiplicity of phenomena itself. One of the inspirations here is Mol (2002) who presents the multiple body and medical practices through vivid storytelling.

Diffraction as methodology proposes different relationships to data. Specifically it has been used to deal with ethnographic data (Taguchi, 2012; Levy, Halse and Wright, 2015; Mazzei, 2014).

Diffraction at the core is feminist, and has been used in feminist and queer studies of borders. I have to highlight the influence in my own *diffraction* of the work of Gloria Anzaldúa (1987/1999) not just she is also Latina, but because the American-Mexico border tension touches me personally. As her text is diffractive with prose, the *diffraction* is also in English and Spanish. In the uses of languages (and diffracting voices) the work of Handforth and Taylor (2016) is an example of diffracting voices and authorship, experiments undoing the normalised practices of academic writing by weaving together various kinds of texts and complicating voices.

However my take on *diffraction* is diffracting many of these previous approaches. I am diffracting(ted) by/through my personal reading of Barad. My *diffraction* is transversal, across theories, practices and stories, uses of language and rhythms of reading and writing. I am myself diffracted with the research and with digital public space(s) that are in themselves already diffracting(ed). My *diffraction* is 'using words in such a way that they can carry the weight, and the depth, of the phenomena in question' (Ruppel, 2008: 32), not to prove, argue or convince but

to propose a conversation, to appeal, to seduce, “pointing toward the possible” (ibid., p. 33).

*Diffraction* for Sehgal (2014) is:

A stone drops into the water, disturbing its calm surface. The ripples caused by the splash form amplifying circles. A second stone drops. The new circles of water waves interfere with the first, thus forming a pattern. (p. 188)

I am imagining *digital public space(s)* as a pond in the middle of very muddy waters and moving sands. The pond changes, according to rainy seasons and sunny days, and with the movement of many others and its disciplines, that are all in it, trying to explore it with big machineries of knowledge and small, eternally innovative and almost magic, digital devices. I am dispensing with the idea of god-vision navigation map, of measuring the pond’s diameter or deepness, of trying to know what size or shape the pond has, because I am in the middle of that pond. I perceive the end of the pond in a different position as I move. Instead of looking for fixed borders, I throw a pebble and notice the shape of waves over the waters. To know about other pond qualities I will move around, making sounds, listen to echoes, throwing light, getting pleasure at the uniqueness and partiality of the resonances, interferences, coincidences and differences, of a game of waves and stuffiness of the *digital public space(s)* pond.

## 2.2. The body-tool *(dis)continuum* in practice

### **From the Lab to the Lounge: Creative Exchange body-tool**

...the point is not merely that knowledge practices have material consequences but that *practices of knowing are specific material engagements that participate in (re)configuring the world*. Making knowledge is not simply about making facts but about making worlds, or rather, it is about making specific worldly configurations. (Barad, 2007, p. 91)

I stated in the introduction of The Creative Exchange programme (See section III in 'How to read this thesis') that I was entangled in a tripartite project. On one side, I was developing this research, on another I was committed to each of the CX design projects in which I collaborated, and with that I was part of an overall exploration of Knowledge Exchange through design practices that was the umbrella project of The Creative Exchange program. In this section I review 'The Creative Lounge' a project that explores the design of knowledge exchange tools within the Arts and Humanities and Creative context. I chose this project in particular, as it allows me to elaborate on that meta-level of my practice that was to explore affordances of participatory design in the context of knowledge exchange. Narrating my experience in this project also allow me to bring you near to the journey that The Creative Exchange program was for us, as this project involved the revision the first phase of the program to propose the design of the second phase. In short this section is about models and mechanisms of knowledge exchange practices in process.

I am going to be particular about how in The Creative Exchange we designed specific tools for creatively exchanging knowledge between bodies with very different conceptions of what knowledge is and how knowledge can be applied.



The 'Lab' strategy was to undertake interviews with all 42 industry and academic partners to define the landscape and develop clusters of interest. A word map was created as a result of the industry interviews. The resulting six clusters revolve around 'Public Service, Innovation and Democracy', 'Performance, Liveness and Participation', 'Making the Digital Physical', 'Stories, Archive and Living Heritage', 'Rethinking Working Life' and 'Building Social Communities – Dynamic Structures for Growth'. These formed the basis of the first KE interventions, the CX 'Labs', which were held at each of the three CX partner institutions, Lancaster University, Newcastle University and Royal College of Art. Six Labs were held and 25 CX projects germinated from these, and were developed using KE mechanisms and tools, with PhD's, like me at the core but all projects and process were led by industry.



Figure 13 Making the Digital Physical Lab, Salford MediaCity 2013

Although many successful projects arose from these activities, the CX team was in iterative processes of evaluation and discussing frictions and challenges that the projects encountered. From the 28 PhD researchers of the CX cohort, a small group, one academic co-investigator, Prof. Leon Cruickshank, one knowledge

exchange associate, Dr. Naomi Jacobs, and I started together a process of finding patterns and interferences; what was working and why, and what did not work (and then the *whys* are harder; when things do not work it is more difficult to identify reasons, there are many and different from one to one). The team became very aware of the dissimilar contexts in which partners from industry and academia originated. There were discrepancies in language and timescales.

In order to examine processes of creatively exchange, CX second phase used a variety of project development methods. Ownership of this process was given to doctoral students, shifting the model from more industry-led of the Labs, to Phd's experimenting with methods, across the three institutions of the CX. It felt that we were breaching an unexplored field. I was already entangled with my readings of Barad and my own way was to relate *diffraction* with design practice, thinking transversally not just on tools but also on bodies and bodies of knowledge.

In this context, I led the Lancaster approach that we called 'From the Lab to the Lounge' which used a variety of specially developed participatory tools and activities that aim to facilitate first stages of collaborations and project ideation. In what follows I elaborate on design processes to develop these activities.

### **From the Lab to the Lounge**

The second CX phase took a bottom up approach. A series of activities that were designed and run within the PhD cohort, to collect, visualize, discuss experiences of doing CX projects following the Lab model. The idea was to convert what seems like an endless list of complaints into criteria to evaluate projects, not based on results, but in processes and encounters.

From this process, we collated the following observations and recommendations:

- **Stronger Project Teams:** Projects and relationships between partners needed more time and space to incubate ideas and meaningful networks.
- **Safe Environments:** Projects need a safe context that invites sharing ideas securely.
- **Sense of Ownership:** All partners should be invested in the preliminary organization of meetings. There should be a sense of ownership and caring from each partner.
- **Horizontal collaborations:** The projects should include every partner on an equal level. It was a need for transversal processes that address differences in a horizontal level.
- **PhDs with more leading role:** Doctoral researchers should experiment with KE tools to catalyse better collaboration and more creative exchange.
- **All research interests included:** New themes should cluster the interest not just of the industry and academic partners but also the interest of PhD partners.
- **Pre and Post events:** The mechanism should include multiple encounters, emphasis in the encounters rather than the lab and the results.

Building on the process described above, the brief for the Creative Lounge was:

- *Together in the same sofa*

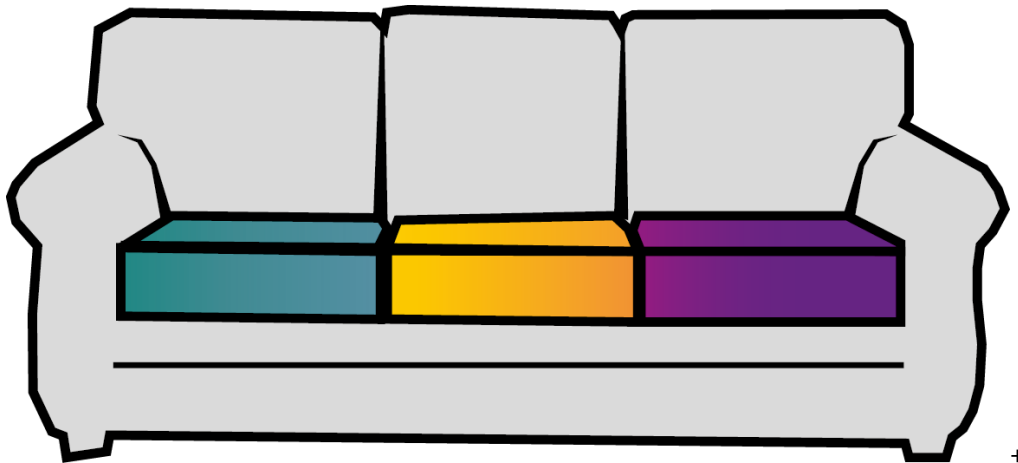


Figure 14 This icon was designed for the event, used in the 'Journey Booklet'. It meant PhD's, academic researcher and industry partners at working at a horizontal level.

The theme of the Lounge was 'Engageable Cities' and Knowledge Exchange tools were design around the concept of 'sitting together on the same sofa', lounging all three partners – industries (from different sectors and significance), academics (of different ranks) and the multidisciplinary team of PhD's – in a creative encounter that could catalyse project ideas. The main task was to design an event that would offer a space comfortable enough that potential partners felt safe to share and develop ideas in collaboration. Looking to create a horizontal playground of ideas, we design activities KE tools, which are each described below.



- *Hearts & Hats*

*Function: Icebreaker, setting the tone, stripping out of little titles prefixing names.*



*Figure 15 “Hearts and Hats’ tool in use at the Creative Lounge Event.*

‘Hearts and Hats’ was not just as an icebreaker; it aimed to set the tone and rhythm of the day from the very arrival of the participants. It was designed as a way to get rid of titles and bypass academic hierarchies and industry ranks that usually precede people within these contexts. My main concern was how to *interfere* with hats and power positions. I used the idea of *performing* to inspire this activity.

The team came up with the idea of making an avatar for the day, as a way to greet participants, invite them for photo booth fun. These photographs became the participant’s avatar for the day! The avatars could be personalized with props and other accessories. In the body of the avatar, a t-shirt was drawn with a big heart in the middle.

The idea was that participants have fun making the pictures, and showing to each other their printed photos. All participants became the same: same size, and without titles, in a white avatar. Participants wrote their names (sans titles), in

the hat their role or expertise and in the heart their interest for being at the Creative Lounge that day, what they wanted out of the event. After everyone settled down, each participant had 10 seconds to introduce their avatar in random order: their names and just what it was in their hats and their hearts, nothing else:

“ My name is... my hat is...and in my heart is...”

- *Link Map*

*Function: Connecting participants with the theme, and with each other*



Figure 16 'Link Map' in use at the Creative Lounge Event.

On a principal wall a 'link map' was hung, designed to resemble the Manchester Metrolink map. Each of the metro lines represented a topic connected to the overall theme of 'Engageable Cities': 'Digital', 'Connectivity', 'Heritage', 'Wellbeing' and 'Imagining Futures'. Some 'stations' were also pre-filled with names, for example 'digital public space'. After the introductions and fast track 'Hearts and Hats' presentations, each participant positioned their avatar in one of the 'lines' of the 'link map'. The idea was to visualize how connections emerge during the day and how entangled these connections were. A complexity start growing and potentials were collectively realized.

- *Thematic Walk*

*Function: Ideation around the theme, allow informal transfer between discussion groups, PhD engagement*

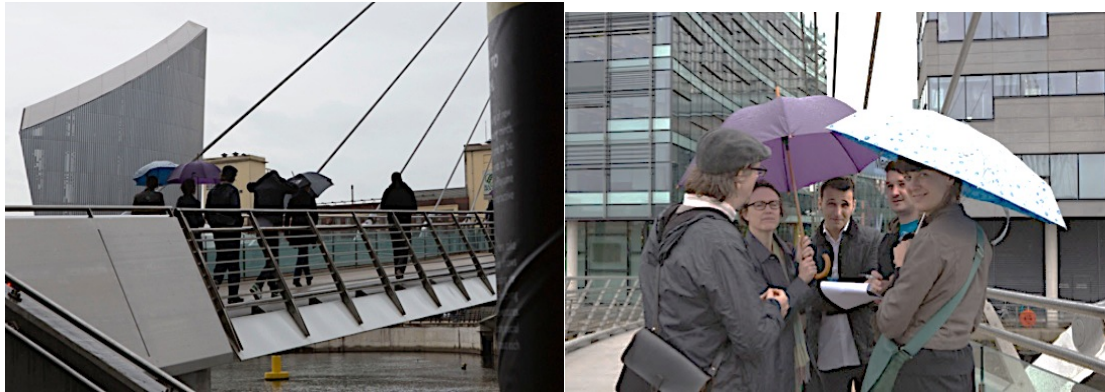


Figure 17 Thematic Walk with participants from the Creative Lounge. It was raining but that did not stop us!

Yes! We went for a walk! A mobile method that allow people to connect freely, approach others and more importantly, disengaged if necessary. The PhD researchers took the role of tour guide and facilitated the walk, stopping in landmarks that set specific conversation and collecting 'collecting of ideas'. It offered PhD's the occasion to 'sell' research ideas and interests.

The walk mobilised people and ideas, personalities permeate out of the official role, the place inspired. I saw participants *intra-acting* with ideas, the Media City and in between themselves.

- *Partners Pie*

*Function: Team formation, concretising project ideas, identification of missing skills.*

After the 'thematic walk', teams exhibited their best ideas and notes from the discussions. Other groups could mingle and view these notes, ask questions,

discuss the topics with participants of other teams, and think about emerging themes. By that point of the day the venue was rearranged into individual tables. On each table, was a round paper template ‘partner pie’.



Figure 18 Left: Notes from the “thematic walk’. Right: ‘partners pie’ tool.

Each ‘partners pie’ was the seed of a potential project. In each slice of the pie participants could write their names. The pie had three colours and each colour represented academia, creative industries or doctoral researcher. The pie had to collect at least one member from each colour. Participants had the liberty of writing their name down in more than one pie, or start up a new pie at any point. If any of the pies or teams missed a member of a colour, they had little cardboard cut-out participants that stood on top of the slice. This meant that the pie in question was looking for a sort of partner with a specific set of skills or profile, for example, the cut out was a programmer or an expert in sound scape.

This tool allowed teams to develop organically, but gave us a means to collect the necessary information to follow up after the event, and provided us with a clear ‘end point’ to the day that could either be a developed project idea, or simply a group of people who wished to undertake further work together.

- **Creative Exchange Journey Booklet:**

*Function: clear explanation CX process.*

The Creative Exchange 'Journey Booklet' came about from the realization that bureaucratic and administrative hurdles in phase one caused anxiety and delays, affecting creative processes of ideation that we were aiming to maintain fluidity. The 'Journey Booklet' was designed as visual companion. This booklet was provided at the beginning of the day, to map out the event and the following processes and possibilities.

Interestingly, for the 'Lounge team' designing this tool was an incredibly insightful exercise. We all had about two years working on CX and in CX projects, but at representing and doing visual schematics of the relations and processes, we came into endless discussions. I realize that each of us saw the Creative Exchange differently; each of us had its own version. It was an exercise of mapping the *un-mappable*, and to artificially stabilise processes that were far more unstable than what the booklet showed.



Figure 19 Creative Lounge discussions. (The one in the centre of the left picture is Dr. Jen Southern my supervisor!)

As a result of this event, four teams emerged either with ideas for projects around the theme of 'Engageable Cities'. Three CX projects were successfully funded; 'Path of Desire', a qualitative map, that erases as is uses and replaces itself with memories and affections (Gradinar et al. 2016). 'Near Miss' a project that explored behaviours and perceptions of cyclists' accidents and safeness. 'Community digital board' a project that prototypes interactive communities pin boards.

I was working across sectors with partners that were not always used to working in creative settings, or with super creative partners who brought their own ideas – sometimes very fixed ideas – of how creative collaborations should work. Some times, a CX living project had a force of its own and sparked into creative production very quickly, then I had to catch up, (sometimes I managed, sometimes not). On other occasions, CX projects were more timid or found more frictions and I had to give them a little push (sometimes the 'push' made things worse and I tried something else, sometimes it flew!).

In Design Research there are scholars who elaborate on creative facilitation, participatory design, responsive processes and co-creation as processes that rely on improvisation, serendipity, letting go of power and horizontal participation.<sup>24</sup> However, I am describing the phenomenology of it, how it feels to facilitate these processes, and develop a practice of it in the context of knowledge exchange with participants that, most of the time, have more experience and are in greater position of power than me. This role was not prescriptive, it was very intuitive. It was always about care and response-ability, about maintaining the right balance,

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<sup>24</sup> For more on Design Research, c. Tassoul, 2007. Binder & Brandt, 2008, Simonsen, Jesper & Robertson, 2012, Sanders & Strappers, 2008, Kensing & Blomberg, 1998, Gamman & Thorpe, 2007.

the right tension. At the beginning it was very scary, testing new methodologies is very scary and especially if they are about participation and letting go of control over possible results. Collaborating with people and technology, is explosive, it was always a surprise. More than thinking on methods to arrive to findings; I was thinking *in* methods to foster creative encounters.

I was always thinking on, and *in* methods, but not as representations.<sup>25</sup> I was not catching little pieces of reality; I was not counting numbers, collecting evidence like one can collect apples from a tree. What interests me is what the datum could not reflect. Usually methods are to control variables, standardize precedents and systematises findings. What concerned me was how to figure creative exchange methods to take care of encounters and its surprises, methods that let go control, that destabilise rather than stabilised.<sup>26</sup>

I was thinking *in* methods for many things and at many levels; for this thesis, for each of the CX projects that I bring into the thesis, and methods that I was designing for Creative Exchange. Even little methods to take notes, to record the experience, interested me. Once one is aware of the representation, one sees it everywhere, I wanted to escape data. Today is the first sunny and warm day of the year, I was thinking about how to articulate my role in the CX and how I struggled to articulate it. I took my lunch and sit out in the sun to take a break from it. Here is a thought that came to me and made it clear:

I noticed that I was not the only one with the idea of having lunch outside, the university was populating with lunch boxes and its eaters, on benches and on the

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<sup>25</sup> Scholars have elaborated on non-representational and post-qualitative methods using New Materialism framework (Lather & St. Pierre, 2013; Maclure, 2013), posthumanism (Taylor, Blaise & Giulgi, 2013; Jackson, 2013), using Deleuze's ideas (Mazzei & McCoy, 2010; Lenz Taguchi, 2012; Mazzei, 2013), and inspired by desire as a framework (Tuck, 2006).

<sup>26</sup> For more on designing knowledge exchange tools, c. Cruickshank & Morris, 2014.

grass, around the campus. There is a specific corner in were all the cleaners sit. They sit there all with their uniforms, which “uniformed” them, smoke and laugh, loudly. I thought I would like to have my lunch with them; I was totally up for a good laugh and smoke. Professors meet, shake hands with affection of old colleagues and walk away with *distinguished-ness* and tweed blazers, gesticulating in a manner that just allowed for respectful wave and a shy nod. Students walk faster, the campus is for them a fast vehicle, from one class to the other, and to their dormitories and clubs, with the hurry of the ones for who the whole of life is not enough, they wear headphones and hoodies, they carry big bags, the hug each other and jump with enthusiasm, spring is here! I saw the designers of ImaginationLancaster having salads outside. Designers dress in a particular way, in between comfort, style and a uniqueness that made them recognisable, with their interesting spectacles. Then the managers and administrative personnel were somewhere else, perfectly recognisable, their suits stand out against the blossoms on the tress. The porters also, well separated by their walky-talkies, their blue uniform and the authority of all the keys.

Borders were impenetrable. I was thinking what would happen if I sat with the cleaners and eat my lunch with them. I would be trespassing their borders; it would be almost like colonizing them. To join them was unthinkable, at least not in their corner. Neither is mine, PhD's also have their own distinct corner and ways, with the tormented faces, clever jokes and tragi-comic roll of complaints. It cannot happen, we could not have lunch together while marked apart by uniforms and idiosyncrasies. We share the same place at campus with different motivations and times. I want to have a PhD done and move up. I want the time



to go slow so I finish this writing, they want to keep their jobs as eventless as possible, they want time to go fast, to go home as soon as possible. They always arrived much earlier than me.

If we were to share lunch and learn about each other beyond what we already do not know about each other, it would have to be in a 'neutral' space without *interferences*. Or better placed, that 'neutral' space would be an *interference* from our well-defined, material-discursive, corners. A space in where we strip out from our mutual *uni-forming* enactments and learn to be with each other again.

We would not know what to do, we would improvise, we would play it by ear, we may ended up having lunch in complete silence, reaffirming the reasons for our respective corners, or perhaps, we would find a connection. We would share a smile, agree on something and disagree on something else that would make us exchange opinions. Maybe, who knows, we would like it, and find an excuse to meet again, we would not need a big *interference* space again, we could meet in a new place maybe inspired by the weather or by one of the new discovered mutual interests. Maybe one day, I would get invited to the 'cleaners corners' and then, the uniforms and sarcastic PhD jokes, will not matter, and then I will laugh and puff. For now, I am back to writing.

I was thinking *in* methods to design The Creative Exchange a lot like that, a space that strip out uniforms and hats, both actual, and metaphorical, a space-interference that shuffle borders. Spaces for finding patterns and coincidences, "differences that make the difference"

## 2.3. Encounters: A man called Gareth

There are some stories you hear, there are stories you tell, and there are others that get tattooed in your mind leaving you unable to do or think about anything else. Those kinds of stories keep on coming back in repetitive concentric circles, entangling you, they do not leave you until you share them; they put you in debt, they do not belong to you, they have their own rhythm you cannot drive. This story (dis)continues my ideas of body and tools entanglements enacting it though other configuration.

It was almost eleven on a summer night in Carno, Caersws, Powys in Mid Wales at the Aleppo Merchants Inn, the only pub of the small village. A small, small Welsh village of the kind that you just can find in the middle of Mid Wales and in the movies that romanticized them. The small and romanticizeable village of Carno is famous for two things, first, as the home of Laura Ashley, yes the one from the shop. It was also the home of its factory. According to the friendly owner of the Aleppo Merchants inn, by the 70's and 80's, 90% of Carno's population worked in the factory until 1985, when it was first moved to the nearest decent size town, Newtown. Laura Ashley, the factory, was later bought by a Malaysian company. In the Ashley era of Carno, all brides in Carno had a Laura Ashley wedding from its respective discounted wedding list. Stylish. The second thing that made the village of Carno famous was its nesting role in 'Operation Julie', yes, 'that' legendary same Operation Julie of the 'The Clash' song and other mythologies. In order to gain some respectability and because of its degree of psychedelia and illegality, I am going to disconnect my story from that

one – accepting that I would love to keep carving in that direction, but maybe that would be material for another story, not this one – now let's focus:

At the Aleppo Merchants Inn, the only pub in the village of Carno at the latest night of a hot summer we had a special and illuminating encounter with a man called Gareth. A man called Gareth, maybe, like many, many other Welsh men. So we are in the archetypal romanticizeable village of Carno and talking with an archetypal romanticizeable man called Gareth.

The last order bell rings and we ask him, if he was also an ex-Ashley breadwinner like the other bunch of obviously regular late comers including the gentle pub owner that introduced us to Carno's recent history and to a magnificent couple of local cask ales. He answers that he never worked at the iconic English (even though, as you can conjure by now, it was actually Welsh) romantic-19th-century-rural-feel factory, but he was a mechanical engineer, and that he was a professor for a long time in a Welsh university. He worked at making machines (some of them for the Ashley emporium) until he retired more than 20 years ago.

Gareth retired, or better articulated, he was retired by the changes in 'mechanics', as he knew, made, manipulated, understood but more importantly enjoyed. Basically, Gareth was retired by computers and he proceeded to tell us how as a mechanical engineer, he designed machines, taught how to design machines and systems, how to operate and understand them, until design software did it for him. Opportunely he also learnt how to operate the software and the computers, it was not a question of illiteracy neither inability, they retired him because of a lack of his desire to work with them.

Gareth was passionate about the actual cogwheels, gear teeth, the apparatus, the inner workings, the machinery itself. He loved his job, arriving to work with a pencil stuck behind in his ear and a metallic ruler over his drawing board, making calculations aimed to finally give the machine “life” by adjusting its “tick-tick-tick”, usually by tuning them with his own heart beat, and Gareth, in front of us, moved his fingers rubbing the index with the thumb, as if he was tuning an old imaginary radio that cannot emit any sound other than an old embodied memory.

He told us about how he enjoyed that point where the mechanisms start to work almost like an artifice of his own hand, a sort of vital rhythm that trespasses the invisible frontiers of his body to animate the machine and make it work. It was the tactile, the tweaking and polish, the bodily thinking and adjusting, and the power of his arm, that make the engineering do its magic. He could never cope with missing all of that with mediated computer calculation and drawings. So he decided to retire and set up a local company that make toilet systems, instead. Gareth retired around the same time Laura Ashley was moved from Carno to Newtown, Laura Ashley the factory. Gareth retired around the same time Laura Ashley was buried in Carno’s church courtyard, Laura Ashley the iconic English (even though it was actually Welsh) romantic 19th-century-rural-feel designer. Gareth retired around the same time that six pieces of paper were found in the inside of a red Range Rover involved in a fatal car crash near Machynlleth, which, after being reconstructed spelt hydrazine hydrate - a key ingredient in the manufacture of LSD. It was this crucial finding that led the Detective Inspector Dick Lee of the Thames Valley Drug Squad to envelop the whole Operation Julie, but we already agreed that this would be part of another story. Those

coincidences in time, of course, Gareth never mentioned, those coincidences I found them myself in Wikipedia, you can Google it too and find them yourself by the art of 'we now all know exactly the same things'.

We all know and do not know exactly the same, but a man called Gareth at the Aleppo Merchants Inn kept on telling us that he dislikes all that Googling around, with his fascinating Welsh accent conjured with an old smoker voice, he went on signalling the fact that his old fashioned phone was useful just to make calls, that he did not like all that making photographs every two seconds, all photos getting mixed up, the important ones with the mundane. I must confess that specific part of the conversation was triggered when I tried to take a picture of a decoration detail in the pub, and realized my phone battery was gone.

Gareth told us that he does not do the whole business of photographing everything, that he just carries the meaningful photos in his jacket with him all the time. I know you are starting to picture this man called Gareth like an old grandpa that of course does not do mobiles or computers, and you maybe start to guess that my story is about the so called digital divide. By any means, do not take me wrong, our man called Gareth is not that old, is not an anti technologist, or a digital illiterate. He explained to us that he just likes to choose his most favourite photographs and carry them, just keeping the piece of printed paper in the internal pocket of his jacket.

A man called Gareth, that late night in the only pub of the small, small village of Carno, took three photos out of the internal pocket of his jacket long after the last order bell rang at Aleppo Merchants Inn. The first thing that I learnt from it, was that if any of the remaining pub comers is able to provide an evidence for a

promising good story the last order bell can be bypassed and the clients of the Aleppo Merchants Inn are able to get another round of ales.

The second thing was that two of the photographs were more than 18 years old and the third photo was more recent. The first photograph had what to me was a small kind of canoe or a sort of watercraft that I soon learnt was a *coracle*, made by him. The second photo was the same coracle with a baby by its side; the baby in question was Gareth's daughter that was twenty years old that day, and the mother of another baby of a similar age to her as baby in the old photo. The third photo, the recent one, was a photo of the daughter's baby.

*Coracle.* I had all my attention and curiosity on the first photograph, the second one serves us to understand that the two were obviously taken at the same time, more than eighteen years ago, and by the state of the photograph, they had been eighteen years in that pocket. For the third photograph, proud Gareth was happy to hear our free compliments to his grandson, and we quickly went back to the *coracle*.

Gareth explained that a coracle is a typical Welsh one-person boat for rivers. He told us that in the old days coracles were the most convenient form of transport for remote Welsh regions, and that they have a very long history. Apparently coracles were seen by Julius Cesar in the Roman Times and used by the British Empire to colonize otherwise inaccessible regions of deep India. He explained to us that in Wales each of its five main rivers used to have its own specific design of coracle. The design corresponded to the sort of current, the power of the waters, the topology of the banks, and specific geographical conditions that each river designated.

The coracle he made, as we saw in Gareth's picture and as he described rigorously to us over the second round of beers after the last order bell rang, it is a structure that resembles the carapace of a turtle or a walnut shell. Gareth added that the specific design for the Carno River, was long lost and last seeing in 40's or 50's – long before Carno had anything to do with Ashley the shop, Ashley the designer or the mythological Operation Julie.

The specific design for the Carno River was long lost. The only designs that survived the whirlpool passage of time and browbeating advances of technologies, are, according with Peter Badge, chairman of the Coracle Society, the coracles designed for the river Teifi, The Towy and The Taf. The National Coracle Centre is to be found at Cenarth Falls, Newcastle Emlyn, Dyfed. Martin Fowler has a display that illustrates the history and diversity of the craft. He can asseverate that just twelve people owned the license to fish the River Teifi for salmon and sea trout using the coracle. The Centre can supply the woven, Teifi-style coracle and instruct in its use, and if by now, you, like me, are already experiencing a growing fascination for Welsh river-specific designed coracles, that is a mandatory place to visit and interrogate the secrets of the materials and meanings of the coracle making.

A man called Gareth, maybe, like many, many other Welsh men, had found a book called the 'Wild Wales' an old journal by a Victorian explorer and language connoisseur named George Borrow.

The respectable and noble man called George Borrow, was well kept in history for three reasons. Firstly, his knowledge of European languages and, secondly, for his travelogues, in which his more remarkable works are his 'Spanish

Mission', his 'Russian Mission' and his 'Moroccan Mission', in which the detailed descriptions of his travels – on foot – across such latitudes, his accounts of culture, geography and languages made him well-known in the English Victorian society always thirsty to oversee curiosities and eccentricities. The last reason we can still find a quote of fame in the respectable and noble man called George Borrow, was his fondness of German Romantic Literature and Philosophy, and such a passion made him the protégé of the Norwich-born scholar William Taylor, who encouraged him to be the first translator of Friedrich Maximilian von Klinger's version of the Faust legend, entitled 'Faustus, his Life, Death and Descent into Hell', first published in St. Petersburg in 1791. In his translation, Borrow altered the name of a city, in the following passage:

'They found the people of the place modelled after so unsightly a pattern, with such ugly figures and flat features that the devil owned he had never seen them equalled, except by the inhabitants of an English town, called Norwich, when dressed in their Sunday's best'.

For his ridiculing of Norwich society, our respectable and noble man called George Borrow earned the humiliation of having the Norwich public library burn his first publication. But this disreputable story is not part of Gareth's tale about coracles, I know it because of the art of 'we now all know exactly the same things'. And it is not in the least relevant for us. This rather disreputable story just took my attention, because my adventures' partner is another passionate scholar of German Romantic Literature and Philosophy, and those sort of coincidences just kept me reading the online adventures of our respectable and noble man called George Borrow, but because the degree of Victorian scandal,



out of datedness and of the already mentioned lack of relevance, I am going to disconnect my story from that one - accepting that I would love to keep carving in that direction, but maybe is material for another story, not this one, now let us focus:

Our respectable and noble man called George Borrow in its last days, predictably married a noble and respectable lady to settle from his European adventures and scandalous manufactures, leaving us with one of his last works, a product of his sedentary married life, 'Wild Wales: Its People, Language and Scenery' (1862), written in his elderly days from his holiday house in Llangollen in the summer of 1854. The travel journals in spite of being accused of much fabrication and little fact, were found somehow by a man called Gareth maybe like many, many other Welsh men, who truly believe to be an actual descendant of George Borrow himself, and I know that because our Gareth in question told us such at the end of the second exquisite cask ale pint in the rear garden of the Aleppo Merchants Inn.

In the noble and respectable George Borrow's Wild Wales, one of the chapters of the journal is dedicated to the craft of coracles and contained a literary description of the process of fabrication of the River Carno coracle with the detail and the precision sufficient for Gareth to decipher the long lost River Carno specific coracle design, proved with a photograph that has been in the internal pocket of his jacket for more that 18 years.

I, interested in the intra-active relation of people and their tools, asked him about what sort of technology he needed to build the photographed coracle. To my surprise he told me that to build a coracle one does not need any sort of tool.

His answer, filled me with poetry and inspiration, is the only and mere motif of my story. The only tool necessary to build a coracle is one's body. Each navigator should build the coracle according with the measures of his own body. Gareth's answer fascinated and accompanied me to the point of feeling the urgency to tell our encounter story, that kept on coming back to me in a sort of repetitive whirlpool, again and again.

That man called Gareth, maybe, like many, many other Welsh men, in the last hours of the night in Aleppo Merchants Inn, proceeded to explain to us, with nothing but a performance made of all sorts of gesticulation and movements of arms and legs, how to tense the river (specific to each river) fiber with his legs, stretching along the person's back with the length of his arms. Our Gareth also told how more than eighteen years ago, he set forth his own expedition along the rivers of Wales, travelling the whole country and crossing the Bristol Channel to the Severn Beach. The photograph was taken the day before he set out on his journey that took him almost a year.

After the story of the coracles, Gareth proceed to tell us about his plans for the next morning, he was preparing to go mushroom picking. Curious, I asked, what sort of mushrooms and he told me that in the region of Carno during the summer season grow gigantic mushrooms and that he picks them and fills them. Even more delighted we asked him about the sort of ingredients he would fill the mushrooms with, and he said -with all sorts! Onions, garlic, tomatoes, seafood, fish, bacon, or whatever is reachable...- the plan was agreed for the following morning at midday sharp, in the same pub, but that of course is part of another story. – This time I really would love to keep carving in that direction because

the recipe is one of the most succulent things ever heard, and that late night surely kept us hungry.

A story told in Carno, Caersws, Powys in Mid Wales, a small, small Welsh village of those ones that you just can find in the middle of Mid Wales and in the movies that romanticized them, in the quiet company of a pub owner and a couple of rounds of the greatest local cask ales, that story maybe is not specially illuminating to you, but it is my chore to tell it because I came back to my place in Lancaster, with the hard task of writing a dry methodological chapter for my doctoral thesis, and Gareth and his story about coracles kept on coming to my mind, irrigating academic methodologies, and going in circles around the body as tool -as methodological tool- and journeys that cross intellectual and material worlds. Then I decided my thesis as coracle to navigate the specific waters of *digital public space(s)*. A coracle material trace of my performance, my body, legs moving in response to topologies, currents and ever-changing geographies of *dps*.

I am interested in his notion of technology as a mechanical designer, and in his relation with tools and objects, in his way to explore his space, and in his way to make it into a story. Is it not, just, what I am trying to write about: material, practices, meaning making, tools and how they affect us, affect our relation with space and place, and our way to relate with that space and others within? I propose a thesis a coracle.

## Inventory of words that matter n.2

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- *Diffraction*

Haraway (1997) proposes *diffraction* as a response of the representational system. Insisting on heterogeneity rather than originals, She opened a call to explore its narrative, performative, graphic, metaphorical, spiritual and political “technology for making consequential meanings”

Barad defined diffraction as ‘cutting-apart-together in one move’ (2014). By considering the move of the knower, makes the knower responsible over what is producing. She affirm, ‘diffraction is a material practice for making the difference, for topological reconfiguring connection’ (2007, p.381)

I am exploring a very personal take in diffractive methodology. For me more than a tool it is a mode to be and relate with knowledge.

- *Interference*

Interference, following *diffraction* physical metaphor is the space where the waves overlap, and light superposes. I like the meaning of interfering as to trouble something. Laura Watts (2007), proposes *interference* to do with a space where adding, combination and join construct and deconstruct, producing something new from alteration and transformation. Her emphasis is on place and location and overlapping of knowledges, I would agree and use it as assemblage figure to deal with the overlapping positions I encounter during this investigation.

- *Assemblage and allegory*

As a practice of figuring things together, we might consider configuration as one form of what John Law has named a method assemblage (Law, 2004).

For Law (ibid) assemblage as methods are “about manifesting realities out-there and depictions of those realities in-here”. He continues, “once one has think this way then reality, realities, take on a different significance”, no longer in independent, prior, definite and singular but, they become, instead, interactive, remade, indefinite and multiple (p.121).

In the context of this multiplicity of realities, Law proposes to look for ways of exploring the enactment of interactions between different realities. There is a need for tools that allow us to enact and depict the shape shifting implied in the interactions and interferences between different realities. There is a need for assemblages that mediate and produce entities that cannot be refracted into words. There is need for procedures, which re-entangle the social and the technical. There is need for the coherences (or the non- coherences) of allegory. There is a need for gathering (ibid).

- *Constellation*

I am using constellation as method of assemblage that considers what is not included, I use it in an effort of reach out, as resource that help me to avoid the recurring framing of the representation. I take as a tool for reconfiguring ideas of reality, conscious of the exercising of flattening to overcome tri-dimensionality in a patter in the distance. Conscious that the arrangement depends on one’s position and importantly conscious of the power of the fragment to make

connections and combinations, from where patterns emerge. Constellations are also the possibilities of connecting other fragments to create new patterns. Constellation is about awareness of the presentation of knowledge as just one possibility, or the infinite possibilities of connection and constellations within constellations. Constellation is inspired in methods of deconstruction and reconstruction of Walter Benjamin (1982) that involves unfolding meanings and matters emerging from eclectic combination of objects, mediums, fragments, buildings, and dissimilar forms to illuminate particular moment. Constellation is lastly about understanding knowledge as becoming and disappearing, in flickering discontinuity.

- *(Dis)continuum*

The notion of discontinuity is going to be key for the rest of this research. As a method, Barad proposes as 'a way of thinking with and through dis/continuity – a dis/orienting experience of the dis/jointedness of time and space, entanglements of here and there, now and then, that is, a ghostly sense of dis/continuity, a quantum dis/continuity. There is no overarching sense of temporality, of continuity, in place.' (2010, p. 240). Discontinuity in a continuum as an idea have to do with the leaps from entity to the other of the continuum, but not necessarily to mark a trajectory but to connect with different aspects of the tension in between the two poles of the continuum.

Barad explains,

Quantum leap aren't jumps (large or small) through space and time. An electron that "leaps" from one orbital to another does not travel along some continuous trajectory from here-now to there-then. Indeed, at no

time does the electron occupy any spatial point in between the two orbitals. But this is not what makes this event really queer. What makes a quantum leap unlike any other is that there is no determinate answer to the question of where and when they happened. The point is that it is the intra-play of continuity and discontinuity, determinacy and indeterminacy, possibility and impossibility that constitutes the differential spacetime mattering of the world (2007, p. 282)

This tension of discontinuity and continuity I posit as *(dis)continuum*, in this chapter I presented in the relation of the research, the body of knowledge and the researcher. However the figure of (dis)continuum is going to be principal in my investigation and will be developed in the next chapter and in the subsequent interlude.

## Chapter Three.

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*Internal-external (dis)continuum.*

A matter of time

*memory in-matter and memory in-making*



### 3. Internal-external *(dis)continuum*.

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#### A matter of time - memory *in-matter* and memory *in-making*

I have stated that what led me to study *dps* as phenomena, was firstly its principle of coexistence or shuffled boundaries; digital-physical, public-private, space-place. Secondly, the prominences of its materiality, the same materiality that the cyberspace worked so hard to hide, and lastly, its *something else* that is *in its matter*. I have presented in Chapter One the idea of study the materiality of *dps* as agential and as a process, processes of accumulation and sedimentation.

Barad refers to *matter* as 'substance in its intra-active becoming congealing of agency' (2007, p.183). This idea of agential material as a *doing* rather than a *thing* opened many questions, such as what is *in* things that does, what it *does*, what is that *it is*? A force, a spirit? I believe Barad calls *it* as *agency*, but I wish she went slower, deeper. By "becoming congealing of agency" I figure spaces of time, a time and space when that matter was less or more sedimented. Barad's term is *spacetime mattering* (2014, p. 168). This chapter is about what is *in matter* and how time comes to *matter*, with the intention of contributing to an *agential realism* framework that will agree with a contribution on *matters* of time.

In Chapter One, I introduced briefly entangled meanings of the *virtual*, I mentioned that these accounts are relevant for my inquiry into *dps*. The reason I dipped my feet in *virtual* waters, was not just to highlight its double meaning; one related to digital environments, and the other related to a non-material quality. The reason interested me was for its generative power. Meanings of *virtual* were loose, maybe as loose as Baradian agency, for some *virtual* is in

human minds; visions, ideas, memories (Bergson 1999, and Shields 2006), for others are in part of the actual, actually encircling the actual like a cosmos (Deleuze 2002). Some authors (Butler, 1993; 1990, Deleuze 2002 and Van Doorn 2011) see *virtual* as open to be rendered, exteriorized or materialized into practices, bodies or things.

I am *returning to* the conversation about the *virtual* I opened in Chapter One, that summed up firstly, virtual is not the opposite of real, but part of it: a generative part of it. Let us now pay attention to that. Secondly, It involves process, rendering, materialization or exteriorization. In this generation, *virtual* implies a journey, a time and space. Or at least the potential for it, again that quality of *may or may not manifest*, same quantum quality that made the continuum discontinue.

By diffracting Baradian *agency* and the *virtual*, I found initially resonances, although I was later left with the same questions. This chapter proposes to go slower, in this process of becoming that shares *matter* and humans. This chapter looks at what is *in matter* that does, programs, accumulates, make spaces and time, generates and that is congealing in things. I propose, memory.

This chapter will find intersections of post-phenomenology and new materialism, to propose a framework for thinking about time and memory within the *dps* domain. I am concerned with memory not as a cognitive process but as a phenomenological account and how its experience is affected within the shared spaces of information-concrete nature that technologies of *digital public space(s)* propose. I am especially interested in internal consciousness of time and

external processes of *material memory*, where the cuts are enacted, and how *dps* sociotechnical settings mediate these.

For the internalized experience of time my investigation will subscribe to the phenomenology of Husserl (1966) and for the externalization of memories I will discuss Stiegler's theories of *prosthetic memories*<sup>27</sup> (1994). Conversely, the argument of my thesis is that within *dps* occurs a phenomenon of displacement of the internal consciousness, and at the same time, incorporation or embodiment of external memory supplements to the point that *memory comes to matter* as part of an internal-external *(dis)continuum*. This argument is based on the concept of *transduction*<sup>28</sup> established in Simondon's theory of individuation (1992).

I utilise Edmund Husserl's understanding of time not as a succession of imaginary points *in* time, instances of the present that forms a time-line directing past to present fixed in space instead I draw from, Husserl proposition of a three-dimensional dynamic gradient of *retentions* and *protentions*<sup>29</sup>. In other words, memories of experiences and anticipations of future experiences occur in a "now" constant structure of the present that will breed the perception of time. I attempt to visually represent Husserl's dynamic structure of time and extend it as an analytical device to contribute to a post-phenomenology of internal-external time *in-matter*<sup>30</sup>.

I elaborate on the idea of Stiegler's tertiary retentions, or what I propose as memory *in* matter, that is, not prosthesis or supplement but memory *in-matter*.

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<sup>27</sup> C. Inventory 3.

<sup>28</sup> As above.

<sup>29</sup> As above.

<sup>30</sup> C. Inventory 3.

Stiegler departs from the idea of a certain intrinsic human need for material mementos as a manner of liaising with present experience of past and desire to last post mortem. I will respond to and challenge some of these aspects related with memory *in-matter* in practice using the 'Physical Playlist' project. Physical Playlist is about designing a playable, wearable device that embeds personalizable collections of digital files in physical objects. Physical Playlist is about physically curating digital files, about slowed down experience and *in-matter* memory.

The last part of this section draws on Husserl's protentions or capabilities of consciousness for anticipations; imagination, speculation, creative capacities, as material manners of liaising with present experience of future. I will then interrogate these complexities grounded in 'Ageing Playfully' as case study. Ageing Playfully explores how digital-physical interaction boosts mobility and wellbeing for people that suffering early signs of dementia is losing memory.

This chapter scrutinizes what is really meant by the claim that matter has agentive and originary factors in its own rights, what is *in-matter* that allows us to refer to materiality as dynamic. I propose that by addressing the question of time-memory as *(dis)continuum* we find illuminations on what is in-matter that is so crucial to the problem of *dps* experience.

### 3.1. A question of time

#### **Topologies of space-temporality**

Predominant Western epistemology, which serves philosophical, scientific and historical approaches, is that time can be divided into evenly spaced increments marking a succession or progression of events. It offers the view of natural or

historical time. This assumption implies that time is human independent, inevitable, irrefutable, immaterial and objective. Time is an apotheosis. Reducing the problem of time to temporality and duration is to limit time to the past. But time in essence is also about the experience of present and the possibilities of future.

Once time is perceived and measured, it is retained in the past. Duration is then the material trace of time. Temporality is the potential for durability, yet to be measured. Time itself however, cannot be reduced to its trace or potentiality to be measured. I propose to interrogate time, and just time, as the inner originary force that constitutes both *matter* and human dynamics, not apotheosis but a possibility for past, present and future, or rather the doing past, present and future in *(dis)continuum*.

The internal consciousness of that time, just graspable in relation with *matter*, the certainty of past, present and future is instinctually attached the humanity. I propose internal time as the awareness of the mortal condition; the certainty of that 'lack of independence and self-contained existence' that Barad posits as being *entangled* (Barad, 2014, p.168). It is the inner, inherited, corporeal awareness of death that makes one perceives an essential, blunt time just tamed by its exteriorization: how much time one has left? Seconds, minutes, days, months, years, ceremonies, agendas. It is a time that occupies space and has material qualities, that is *in-matter* as well as in consciousness.

Barad (2007) in her "Spacetime Re(con)figurings" chapter, elaborates upon her *agential realism* framework and encourages 'to move on from a geometrical notion of space as context or container of matter in motion' (p. 223) and offers

instead a panorama of ever changing space-time topologies. In one sense the following is a response to Barad's invitation and in another is concerned with the subjective experience of time. Barad continues to consider time within the perspective of temporality and duration. I propose a continuation of Barad's *agential realism* framework to think about time dislocated from space. Time separated from the axis of space; time experience discerned not as duration or temporality.

Barad affirms, '*agential realism* takes into account the fact that forces at work in the materialization of bodies are not only social and the bodies produced are not all human' (ibid). *Agential realism* considers *matter* as an agentive and originary factor in its own right, rethinking the equal equation of *matter* and passivity. *Agential Realism's* principle that considers *matter* as dynamic, suggested me to think about time *in-matter*, as inner force that boosts change, movement and agency, or rather *is* agency. One has to envision an idea of the inner time, as independent from space, as ever changing three-dimensional and beyond the linearity of duration.

### **Time as rhythms of the social**

In the efforts to contest this predominant epistemology of space and time, Cultural Geography emerges, particularly in the work of Lefebvre (2004). Space is then understood not as Bergson's homogeneous medium for time, but rather space is that which exclusively social forces can produce. For Lefebvre time is explained in relation with this social dependent conception of space. Time for Lefebvre is explained as the social 'rhythms' that operate along several axes in the context of the social and of the urban specifically. According to Lefebvre's

these rhythms could be 'secret', for example physiological rhythms; 'the said' and the 'non-said', or rather 'public' rhythms, such as, rituals, calendars, seasons. It could also be 'fictional', like verbal rhythms, literary or dreaming. All of these are dependent upon the 'dominating-dominated' rhythm, which is socially constructed, thus the latter effects rhythms within rhythms, and configures urban discipline establishing and maintaining power relationships.

The consequence of Lefebvre's social conception is that time is dependent on human agencies. Within the human-centred vision time would cease to exist in the absence of the social. I am an advocate of moving beyond an anthropocentric view and recognizing agencies *in-matter*.

### **The *matter* of time**

Materialism, feminism, practice theory, reading marxism and structuralism, revisit time-space production of dominant social forces to struggle not just with social practices but economic forces and power discourses and would constitute the spatio-temporal. Space and time as an inseparable unity, the infinite measurable grip.

By looking at time in the sphere of that social space, material culture, specially revising the work of Elizabeth Shove (2009) focusing on everyday practices: the consumption of time: The slowness or fastness of the society, and routines, such as sleep, eat, work or everyday events, like death and life; historical times; standardization, synchronization and regulation in global events; everyday temporalities, creative production and reproduction. The materializing of time proposed by material culture scholars interests me especially as it is matter-focussed.

Under the time-matter unity, objects play a critical role as a kind of compass across our life course: the objects of time, the physical meaning of time, the tangible evidence of the temporal. The study through objects of the acceleration of time in terms of innovation, the consumption of time and new regimens of temporal value: temporal orientation associated to matter, such as an appeal to novelty, different careers of obsolescence and recycling and various kinds of wear and patina which signify age and interactions with people (Shove, 2009, *ibid.*). Also the value of the preserved and historical, the collected, accentuates concepts of original value. Time is rich in material culture and vice versa: “things age and we and our memories age with them” (*ibid.*, p. 18).

I found these ideas about the *matter* of time especially attractive. The time-matter perspective can point us towards some of the tangible differences and practices of time in the digital compared to the physical.

### **How times comes to matter**

According to *agential realism*, space-time is understood in its tension between *matter* and human, nature and culture, and economic and discursive practices. Barad addresses the issue of the spatial-temporal, reading feminism technoscience and post-structuralism with a material focus, seeing space-time as economic and discourse based, a *structure of power*, in constant reconfiguration due to struggles for time or space. (Barad, 2007 pp. 223-40). Barad’s argument however fails to explain the experience of time and how time comes to matter.

A curious observation of Barad’s work is that even after the exhaustive study of how bodies become bodies and matter comes to matter, she rushes time and space into *spacetime-mattering*. Why does time seem already part of a “structure”,



how is it that this “vibrant” and “conflicting” time even comes to *matter*? The structure-verb of the on-going re-configuration of *spacetimemattering*, the movement and dynamism, presupposed time, time in *matter*. I propose to elaborate on how exactly time experience and memories, are central at conceiving a reality *agential*.

I address the question of time, and just time. I propose time as force and field present in both, and in between, consciousness and *matter*. This proposal began to *cut-together-apart* the problem of time into the internal experience and external time or time *in-matter*. The internal-external difference is generative, from it emerges what is *in* and what is *out*, in time. I am proposing to rigorously concentrate on the perception of time before it becomes natural, or historical, social or measurable, scientifically quantifiable; before time is even Barad’s dynamic structure: prior to its objectification or externalization. Time cause and time effect. What concerns me is at first, how time comes to time, the subjective experience of time and how it is remembered *in-matter*.

## 3.2 It’s about time

### **Phenomenology of the consciousness of internal time**

Naturally, we all know what time is; it is the most familiar thing of all. But as soon as we attempt to give an account of time-consciousness, to put objective and subjective time consciousness into a proper relationship and reach an understanding of how temporal objectivity can be constituted in the subjective consciousness of time, we entail the most peculiar difficulties, and confusions. Husserl, in Dostal, 1993, p. 145

Phenomenology of time or Phenomenology of time-consciousness departs from the principle that the consciousness is intentional. Such intentionality is given by previously internalized knowledge of the world; perception, judgment and the acts of anticipation, remembering, imagining, willing, desiring, etc. In this sense the primary experience of time will always be intentional, subjective, and prior to any form of objective time.

Post-Husserlian phenomenology has tended to present being and time as a unity. The phenomenological approaches of Maurice Merleau-Ponty, Hans-Georg Gadamer, Jaques Derrida, and Jean-Paul Sartre, all assume and develop Martin Heidegger's concept of *Dasein* or 'being-in-time'. Parting from *Dasein*, phenomenologists have discussed and built on the levels of intentionality of the consciousness or *ego*, how independent that intentionality is from the subject and from the world. However even these discussion still rely upon what Heidegger refers to as the time-subject, the subject in itself.

In order to tackle the experience of time in itself, it is necessary to travel back to Edmund Husserl (1893-1917), who offers a *pre-dasein* account of time that is not necessarily associated with being.

In his work *On the phenomenology of the consciousness of internal time (1893-1897)*, Husserl (1991) posits time purely and rigorously in the phenomenological account of its experience and as different from objective, from psychological and psycho-physical. Husserl's account is not concerned with reality as such, as experience is not fixed in a pre-given reality. Husserl's interest is in reality in so far that reality is intuited or conceptually thought. In this sense, the subjective in which time is just experienced is the present.

Husserl focuses on the now, dismissing the present as non-dimensional now-dots that are subsequently added to each other to form the timeline. In contrast, Husserl understands the now as a three-dimensional experience and presents us with a dynamic structure of the present moment process (Dostal, 2006, p.iii). This is key for the rest of my analysis of the subjective time-experience continuum.

### **The present experience: perception, retention and protention.**

The present is for Husserl, not the non-dimensional point of instantaneous now, but rather is *thick*, to the extent that *within* the present one finds past and future; that is, a multi-dimensioned of time. Every moment is in virtue of what remains from the past and what it anticipates from the future; in between these two axes of *retention* and *protention* will breed the act of perception. Husserl extends this in order to explain processes and levels of perceiving the now in between these three dimensions of the experience.

### **The raw or given present: Husserl's temporal objects**

Husserl defines temporal objects, in the specific sense, as non-material objects that are not only material unities of time but also contain temporal extension in themselves. Husserl uses the example of the tone and its duration, melody. (1991, p. 24). A way of thinking about temporal objects is in reference to the sound of a water drop in the distance, or the sound of an owl in the wood, or even visions; the vision of the light flash.

Temporal objects are the raw or given present, also the generative now, the phenomenon that gives rise to awareness of the present time phase. Husserl

describes that object as a time-point. Temporal objects are always affected in the meaning-given consciousness by the three dimensions of the present structure: 'it flies into the distance for consciousness'. The distance from the generative now becomes greater and greater. The tone in the manner in which' it appears is continually different. Each retention is a continuum, 'the impressional consciousness, constantly flowing, passes over into ever new retentional consciousness" (Husserl, 1991, p. 27)

### **Retention and protention**

*Retention* is the dimension of the now that recollects, as opposed to the protention that anticipates. The point where they meet across a perpendicular projected axis is the temporal object. *Retention* and *protention* forces work in opposite directions creating the tridimensionality of time that is dynamic an ever changing and that it does not fit in the Newtonian grids.

Husserl distinguished retention from memory because the memory is always experienced as past while retentions are experienced in the now as the main process of perception. Retentions –as well as the protentions – are made by a mass of a 'continuum of modification'. The temporal object itself, *out-there*, is fixed, but as soon as it is grasped consciously, it conjugates within a continuum of modification. According to Husserl this sort of constant modification is the 'stronger data of sensation' dying or dipping away, sinking in consciousness.

*Retention* continuously attaches itself to impressions of the temporal object. Modifying in *retention* as they travel back out of the now and into the past in constant modification as they merge with other retentions. The act of giving sense to the object, of comprehending it as the object itself; the act of objectifying

it, and understanding it as the now momentary phase, is an act in constant modification made of anticipations and recollection of that given moment, and affected by our consciousness.

In Husserl's words: 'At any given time I hear only the actually present phase of the tone, and the objectivity of the whole enduring tone is constituted in an act-continuum that is part memory, in smallest punctual part perception, and in further part expectation. (1991, p. 25)

*Retentions* hereafter are experienced in a continual process of modification to make sense or to objectify the now. As soon as the retentions get meaning and are objectified along the process of perception, time now, has passed. The phase of the moment of perceived and objectifying it will be already part of the past. The *retention* in some sense is the very intuition of the past, however, not the past itself.

*Protentions*, as the parallel process, are the anticipations of the future in the present time. These anticipations are different to hopes or imaginations. *Protention* is the act of the present perception that allows anticipating now, within the right moment of the experience.

I didactically interpret *protention* as a puzzle that is almost completed except for one piece; we can anticipate the colours and the shape of the missing piece. The more formed the puzzle is, the more exact notion of the missing piece we would have. Therefore the dimension of *protention* is dependent upon the perception and *retentions*. It is on the powers of the *protentions* that the generative force relies. By the instinct of future now, the future becomes.

## **Perception**

Perception is the intentional act of “meaning given”. It is the process that unifies all the stages of the now – *retentions, protentions* and the given now – into a meaningful object. Perception is where all “origin” of the memory lies. The perception has a moment of quality and moment of apprehension, (Husserl, 1991 p.41). The moment of quality, the perceived phase of the moment, and the moment apprehension is the given present in its travel to the *retentional* consciousness.

## **Perceived object of objectification**

As soon as the object is perceived, it becomes part of the past. The understood moment will be always in the past, as soon as the tone is understood as tone, inevitably it has passed and is part of the melody. As soon as the minute is completed and bygone our present is part of another minute, second, tone, vision, flash, drop of water on the floor and a memory.

## **The experience of the past: primary and secondary memories.**

In order to recall the past, Husserl differentiates the memory processes into *primary memory* and *secondary memory*.<sup>31</sup> *Primary memory* is perception and *secondary memory* constitutes the re-presentation of that perception.

### Primary memory

Executing a simple grasping, with *primary memory* Husserl refers to when memory “rises to the surface”, “in a flash”. This form of recollection is vague:

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<sup>31</sup> C. Inventory 3.

memory brings forward, intuitively, a privileged momentary phase. But it does not repeat its object.

### Secondary memory

Memories on the other hand become the re-representation of the present, representation that involves fantasy, intention and the influence of the current, present moment when it is recalled. Because memories are perceived in conjunction with the now-time, we execute a memory that actually does reproduce and repeat its object, completely build it up “afresh” in a continuum of re-representations with which we perceive it again, as if it were but only “as if”. The whole process is a representational re-edification of the perceptual process with all the later phases and stages right down to and including the retention, but everything has the index of reproductive modification. It is different from the *primary memory*, which simply looks at the *retentional* object, without producing it “afresh”.

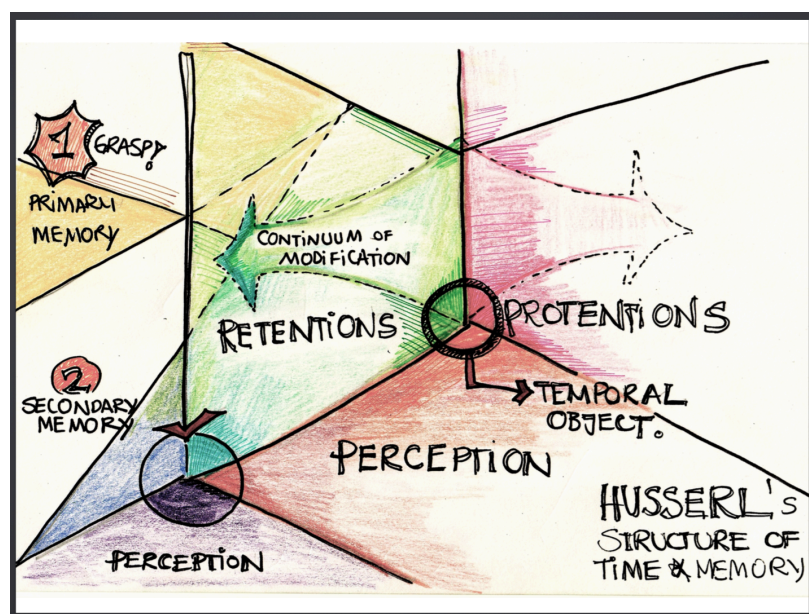


Figure 20 My drawings at trying to understand Husserl retentional system.

### 3.3. Memory matters

French philosopher Bernard Stiegler (1994, 2009 and 2011) revisits Husserl's *phenomenology of internal time consciousness (1893-1917)*, to approach the relation of being and technics. In the first two books of his trilogy *Technics and Time* (1994, 2009) Stiegler develops a historical and philosophical recounting of the relationships between being, tool and knowledge, to think about historicity of human technological advances, setting up the basis for a contemporary philosophy of technics.

I have found the ideas of Stiegler very useful to advance the proposal of Husserl into *matters of dps*. However, Stiegler's terminology is extremely complicated, sometimes even purposely complicated, to the point that the terms cease to be useful for applying to practice. Even agreeing with Stiegler's arguments, as soon as the book is closed, is quite hard to remember any of it. Considering that he discusses memory and memory prosthesis, sometimes, I think to myself, that the complication of language and style is part of a practical joke he is playing. In the following, I am going to be reading Stiegler at the same time as translating it into something than later I can use in practices; creating, collaborating and evaluating *dps* experiences.

My reading of Stiegler is *diffractive*. I will be stopping to find coincidences and overlaps with Barad's framework of *agential realism*. My reading of Stiegler is partial. I am reading into a small section of an incredibly complicated system. My reading of Stiegler is desperate. I agree with many of the ideas, intellectually, and that has kept me with it, but the three books tormented me. As soon as I open them my weather changed, a terrible greyness invaded my desk and made me



feel extremely confused. I kept on bumping into Stiegler's ideas at many points of my projects and every time they made me cry, made me doubt, and made me struggle, but I could not leave them behind. I am aware that the reader may notice this in my writing about Stiegler, even after efforts keep the tone clear.

The system that Stiegler proposes is also partial and fragmented. On his side, Stiegler is also reading *diffractively* Heidegger and Simondon<sup>32</sup>, as well as Leroi-Gourhan, Blanchot and Derrida. I realised that when I was agreeing with Stiegler he was on his Derrida-Simondon side, and when I was disagreeing, he was being very Heideggerian. So half way through my reading of Stiegler I jumped back in time and space to read directly Simondon to understand where Stiegler is coming from. This is the reason that this section starts with Stiegler and finishes with Simondon even though the latter was the first chronologically. I look into these two philosophers to resolve three aspects of my proposal; the idea of *foldable (dis)continuums*, the idea of *memory in-matter* and the idea of *memory in-making*. More generally, I am using philosophy of technics to support the idea of time-memory constituting the *agency*, the *doing*, that is in *intra-acting* between *matter* and humans. I am going to limit my readings of Stiegler and Simondon to what is important in feeding these ideas.

My first encounter with Stiegler was motivated by an idea I had while reading Husserl's internal *retentional* system of time. I thought that the continuum of

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32 Stiegler actually says that he is reading Heidegger and Simondon "transductively". Transduction is a Simondonian idea that is going to be key for the arguments that follow. By the end of this section I will compare *transduction* with *diffraction*. The original quote as follows: 'After these elaborations, let me introduce my subject by telling you that, on the one hand, I have always been struck by the resonance of Simondon with Heidegger or of Heidegger with Simondon, and that, on the other hand, I have just as much been struck by the immense distance separating the two. And it is in this proximity of distance that joins them that I am going to see today a kind of transductive relation, a transduction as Simondon defines it, namely as that which opens up possibilities of internal resonances in a process of psychic and collective individuation, and that thus (re)constitutes its terms.' (2012, p. 186)

modification described in Husserl's system, could *fold*, to work in opposite directions; instead of *sinking*, temporal objects could *ascend out* to the exterior and into matter, breaking and troubling the geometry that Husserl proposes with such care. I like the idea of the *foldable (dis)continuum* and looking into it, realised that Stiegler not just saw a very similar possibility too, but that he elaborated this into the system and its socio-technical implications.

### **Tertiary retentions and prosthetic memory**

Stiegler's argument departs from Husserl by expanding his system of memory, inserting the concept of *tertiary retentions*<sup>33</sup> or *prosthetic memory*. Stiegler introduces this supplementary memory to a complex and dynamic *retentional* system that is very similar if not identical to Husserl's structure, but exteriorized, mirroring the internal system of consciousness in the exterior.

Husserl's internal *retentional* system set the terms for the processes of phenomenological perception. Stiegler's exteriorization follows the same system, but from the internal consciousness towards the exterior and into matter.

*Tertiary retentions* are, according to Stiegler, physical impressions of the *temporal object*, assimilated into the *retentional* system. *Tertiary retentions* travel out from the internal consciousness to impress upon the exterior. The *tertiary memories* are at the same time the temporal object sensible to be perceived within Husserl's phenomenology and also being exteriorized within Stiegler's system. In this sense tertiary memories have constitutive, programmatic powers. The tone in the melody that is perceived has been played by someone else. It is a past that is not my past but without it my past would be nothing (Stiegler, 1994,

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<sup>33</sup> C. Inventory 3.

p. 268-70). *Tertiary memories* for Stiegler are tools and what he calls *the what*. I propose to understand Stiegler's *what* as *matter*. Stiegler refers to this process of exteriorization of tertiary memory in matter as *epiphylogenetic*. I propose to refer to the process as *exteriorization* or *memory in-making*,<sup>34</sup> and to the programmatic capabilities of tertiary memories, *memory in-matter*.

The tertiary retentional system is formed by the primary retention, the conscious grasping of the already *out-there*. The secondary retentions are the re-rendering of this in language, and the tertiary is the impression of knowledge back out-there. In this sense the *continuum of modification* that Husserl proposed, that explains the modification from the external to the internal, *folds* into and continuum modification from the internal to the external. This idea of the *folding*, will become very important, and I elaborate on this later.

Considering technics as human memory prosthesis, has many very interesting implications, Stiegler constructed a whole ontology of beings and technics. He referred to the human as the *who* and *teckne* or technics, as the *what*:

“That which anticipates, desires, has agency, thinks, and understands, I have called the *who*. The supplement to the *who*, its pro-thesis, is the *what*. The *who* is *nothing* without the *what*...” (Stiegler, 2009b, p. 6)

### **The logic of the supplement**

Humanity, for Stiegler, is life having a conversation with death. This conversation implies an already-there knowledge of the mortal condition by default. This essence of humanity as being conscious of death and the desire to transcend the mortal meant the exteriorization of memory as legacy that lives on, death remains. In essence beings originate supplements to make up for the sense of

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<sup>34</sup> C. Inventory 3.

incompleteness caused by the mortal condition, but at the same time, to understand themselves as beings and become through things. Just by exteriorization, do beings become in time and with time. Stiegler see this as *mnemotechnics* or technics as memory supplement. I propose to keep with memory in-matter as term still sufficient.

The logic of the supplement or techno-logic, through which inorganic supplementary matter is organized and take appearance of the living organism of which it is the original supplement, the *who*, meant that technical machines are comparable with bodies, including in its reproductive or originary sense – technogenesis. The interior *who* has always some of the exterior and in the exterior or the *what*, remains some essence of the *who*. As Stiegler writes, above all else, the separation of the *who* and the *what*, is the *objectification* of the *who* and all *subjectification* of the *what*. The border in itself is the techno-logical' (2009b, p 28). Stiegler's logic of supplement means technics is inventing human and human inventing technics. Invention, is the binding of the *who* and the *what*.

### **Disorientation**

The acceleration in the innovation and perfectionism of technology made humans replace their own memory with technological memory, and Stiegler explained the *who* or the interior and the subjective is *disoriented* (as in losing the orient or the home). Stiegler is with the idea that this is because the exactness of the technical representation, the *out-there*, the temporal object, is already technical, it is the already exteriorized memory.

The reorganization of cultural codes to adjust to the *technogenesis*, or the constitutive and programmatic capacities of technological advances, produce both the *who* and the *what, within the what*.

This disorientation takes the essence of the *who* into the other or the *what*. Defining the other of *what* as what is missing from *who*. In the *disorientation* opens up polar relations between difference and referent, here and there, in and out, public and private, strange and familiar.

I find it interesting that Stiegler talks about this *disorientation*, because this would mean the troubling of both *who* and *what* identities, the transition of the *who* into the *what*. I am fascinated with what I understand as *the queering of a who*, or a who in transit, a trans who, perhaps. *Disorientation* means the *who* and *what entangled*, which also troubles the *interior* and *exterior*, and in general ontological binary differentiation. However Stiegler does not see that, he maintains the binary dichotomy of the *what* and the *who*, and refers to it as *disoriented*. Stiegler called it *disorientation*, I think what he describes is that the poles of this *foldable (dis)continuum* are dynamic, are changeable, without a centre, without a definitive identity, with poles in constant *re-orientation* rather than *disorientation*. This understanding of *disorientation* means a *who-what* or equally a *what-who*, that is both queer and post-human, very similar to my dream of a Harawayian cyborg.

*Disorientation* means that the continuum of modification does not necessarily folds at the middle of the end poles, but it could fold at any point, destabilizing essences, polarities and identities. However Stiegler does not seem very convinced of this, the *disorientation* that he sees is more dramatic, is about the

crisis of the subject. Independently of this point of view, *disorientation* ratifies my idea of *dynamic foldable (dis)continuum* of subject-object, interior-exterior, human-non-human and so on.

### **Epochal redoublement**

The advance of technology over culture, the technics' speed gain over the reconfiguration of cultural codes, produces according to Stiegler an *epochal redoubling*. Technics is already *out there* producing *temporal objects*, programming time, memory aids becoming memory itself. (Stiegler 2012, p. 61).

According to Stiegler, when the equilibrium between the *who* and the *what* is broken and genesis is concentrated in humans or culture, there is moment of breakdown in the techno-logical. Correspondingly, when the technical pole is charging faster, accelerating technogenesis occurs, what Stiegler called techno-logical (*épokhal*) redoublement. According to Stiegler this disrupts cultural reference codes, produces an epochal breakdown.

Again, I have to bypass the cataclysmic sense of Stiegler's tone and stuck to his *epochal redoublement*. This means that the *dynamic foldable (dis)continuum*, cannot just fold, but it folds again. I find this idea far from a catastrophic breakdown and actually very beautiful. It takes me back to the whirlpool, to coracles, to loops in the making and in between temporal spaces and times, momentarily overlapping of spaces and time, in between this pliés, under the layers, the idea of *digital public space(s)* emerged.

### **About time**

Stiegler brings the delayed reaction implied by the logic of the supplement to the forefront. For Stiegler this logic suggests that the tension between technics and

being is time itself. At this point I am switching to Simondon, as the co-constitutive relation from where time emerges is better explained reading Simondon.

### **Simondon on transductive relation**

Stiegler read Gilbert Simondon, another French philosopher who studied the co-constitution of beings and technics. Stiegler uses Simondon's theories of individuation and takes his notion of *transduction*<sup>35</sup> to describe a relation of human and technics that is at the same time generative and co-dependent.

If reading Stiegler was tormenting, reading Simondon was exhilarating. I found his theories incredibly visual, inspiring, suggestive, and extremely impassioning. However, my elaboration of Simondon for the purposes of this project is also partial and fragmented, as I am continuing to pick and mix in order to build a framework through which to approach *dps* in practice. Simondon applies chemical principles of crystal formation and physical phases of matter, to cultural theory, and relates these with technology. Through these applications Simondon develops the framework of individuation.

Simondon proposes to pass from the ontology of being to an ontology of becoming, that sees the individual as an operation in time, humans becoming individuated and temporalized through exteriorization. Metastability becomes the key concept in Simondon's philosophy of becoming. Becoming beings are in a state of disequilibrium and tension that is metastable. This tension between becoming and what Simondon calls in-formation, accounts for the production of the new. (Sauvanargues, 2012, p. 58).

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<sup>35</sup> C. Inventory 3.

Becoming, for Simondon, consists in a *transductive* tension, conceived as creation and differentiation, which produces the new and itself in a catalytic encounter when metastability is affected. In individuation, for Simondon, there is a succession of *transductions*, since each rearrangement of the system provides the starting possibility for a new transformation, but at the same time is always looking for the equilibrium.

*Transduction* therefore consists in a problematic tension that is resolved through the appearance of a new dimension, the formation of crystals in terms of chemistry and becoming being through making, in terms of culture and technics. Individuation is thus revealed at the same time as the solution to a conflict, the discovery of an incompatibility, the invention of a form. It is clear when reading Simondon, what Stiegler meant by individuation and identification through exteriorization. *Transductive* processes conceive of beings becoming and *matter* taking-form – *in-formation* – in the same originary tension (ibid, p. 63).

### **Generative differentiation**

*Transduction* defines the individual in the encounter and also in the re-configuration of the *milieu*, from both what is forming and what is becoming. *Transductive* tensions are creative disparities. Either side of the tension is mutually dependent as creative agency. From that *transductive* tension an individual is created which is the resolution of the tension. The resolution is generative of other, responsive tensions, which are dynamic and temporal. The generative forces that arise from these tensions and their temporalities, is time, time in itself. This is, *transductive* becoming distinguishing at the level of present actuality the irruptive streams of the past and the future:



This difference between interior and exterior is temporalized within lived temporality and within an emergent exteriority, and actualizes the threshold of the living by unfolding in the real the difference between matter and memory, past and future. (Sauvanargues, 2012, p 66)

### **The interior-exterior membrane:**

According to *transductive* theories, individuals interiorize their techno-social setting, or *milieu* the generative *what*, until metastability is affected and invents anew in a process of exteriorization, a process that gives form to both a new *milieu* and to the becoming being. Theories of individuation understand the difference of interior and exterior as a membrane.

According to Simondon, the membrane must not be understood as an inert limit or the simple border of the interior. Membranes are active producers of interior and exterior, 'the functional and active polarity of the membrane configures the external milieu as much as it constitutes its internal milieu'. (Simondon, 1992, p. 67). Under this principle, within the membrane or border there is interior and exterior: the most exterior pole of the interior and the most interior pole of the exterior; connection equals differentiation. Both polarities are unstable, active, and selective, they choose to borderline what is favourable, and integrate or reject what is most unfavourable. Some, but not all, external bodies can pass into the interior, and an identical selection comes to bear on bodies of the internal *milieu*, some of whose elements migrate towards the exterior.

The polarized membrane is, in short, the difference between exterior and interior, which is the result of its differentiating *transductive* process. The polarized membrane therefore folds its organic pellicule and curves around itself

in order to rediscover, at the terminus of this torsion, its own milieu of interiority (ibid, p. 67). The selective membrane is thus productive of its own interiority.

The differentiation of exterior-interior is not just spatial; it produces time. Simondon sees this differentiation as a *membrane* or skin that in itself is interior and exterior and at the same time productive of generative transductions. The difference with Stiegler is that Simondon is very clear in affirming that interiority and exteriority are all in the living, the differentiation occurs in the folding or crease or “plissement”. Simondon conceives of the physical and the living as different types of the same process of polarization.

The limit that is in progress of becoming is the one that separates the past from the future. In the living cell, on the other hand, the membrane separates the interior from the exterior since the interior is not past but contemporaneous to the membrane (Simondon, 1992, p. 223)

After the processes of exteriorization what remains in the interior is the vital identity, the first memory, or what Simondon calls the organic memory of the living. But the interior is always generative of the other. In this sense the interior is always past and in the exterior lies the possibility for future experience. The future and the past, topologically speaking, are the two sides of the *membrane*, which distinguishes the one side from the other.

In this sense the *membrane*, or skin, in its folding, creates time and space. That is why it is so difficult to separate time from space. (Sauvanargues, 2012, p. 68). This idea of *polarizing membrane* is going to be key for the analysis of *digital-physical (dis)continuum* discussed in the next Chapter (Four)

The previous discussion suggests to me that Stiegler's *who* and *what*, are poles of the same membrane, or continuum. The *who* and the *what* produce each other by differentiating, and in doing so, they also produce from the tension in between them, the double sense avenue of exteriorizing memories and internalizing the out-there knowledge. This traffic of exteriorization and internalization, in itself, is time.

### 3.4. Memory in-matter and time in-making

By reading Stiegler and Simondon, I come to this conclusion, the *transductive* logic of individuation leads to a complex and phased temporality, constituted by its own past differentiating its own capacity for the future. Within the *transductive* interior-exterior continuum, the interior of *who* can just recognise itself in the exterior of *what*. The poles re-orient themselves through invention and by inventing, by rendering past and future.

Towards my own definition of time I subscribe to Husserl's understanding of a three-dimensional dynamic gradient of *retentions* and *protentions* in which memories of experiences and anticipations of future experiences occur in a "now" continuum of modification that will breed the perception of time. I also agree with the *fold* of this continuum towards the exterior and into matter or *tertiary retentions* that Stiegler proposes. Finally I apply Simondon's *transductive* relation to the polarizing *who* and the generative *what* to read it diffractively with Barad.

I understand, firstly, time in the flux or traffic between interior and exterior. The *who* interiorizes *temporal objects* and exteriorizes memories into *what* that is equally generative, *who-what* in *transductive tension*.

Secondly, what is in-matter that means matter is generative and *agential*, is time, time itself. Time comes to matter *in-formation* by the exteriorizing the internal, equally what becomes interior conscious of time is the interiorization of the external.

Concordantly, I am going to understand this transduction as taking time within an internal-external, *dynamic – because of the instability of its poles – foldable (dis)continuum*. The difference that polarizes both ends of the dynamic foldable *(dis)continuum* is inventing, its invention, is invented. So, it is in this generative difference that the techno-logical innovates, the temporal generative border point is invented and inventing. In this generative difference, what Simondon understand as permeable selective membranes, is binding what is invented and the next invention, past and future.

The exteriorization of *tertiary retentions* will be always about the past, about storing and accumulating what is lived, that I propose as memory *in-matter*. The rendering of this past, exteriorized in the present assembles of the future, I propose as *in-making*.

*Memory in-matter*<sup>36</sup> is in the interior of the exterior, the most exterior pole is matter in-formation at its most concrete degree, however it always will contain part of its origin, in-dissociable from, *entangled* with, the interior. The polarization of exterior-interior is temporal, negotiated, in on-going re-

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<sup>36</sup> C. Inventory 3.

configurations. It is invented/ing. I propose this programmatic capacity of the beings and technics creative tension, as agency *in-matter*, enacting discursive-material boundaries.

The form is the most exterior pole of the matter travelling out of the beings, the in-formation is the interior of the exterior that is always associated with *who* becoming, that I will call in-matter. Barthes (2000, [1980]), talks about a similar concept with respect to photography, that he calls the *punctum*. It 'rises from the scene, shoots out of it like an arrow and pierces me...the accident that pricks me (but also bruises me, is poignant to me)' (2000, p. 27).

Husserlian intuition is generative, originary and creative. For Stiegler 'the future is the task of thinking'. It is in 'this thinking of (by) technics... in the measure that transforms the to-come and is the connection with the future. Technics brings past to the present and the anticipation of the future' (2009b, p 63). Technics makes time. Anticipation is delayed appropriation of what is to-come.

*Memory in-making* is the present anticipation of the future exteriorized *in-matter*. I am proposing *memory in-making* as the exteriorization of Husserl's *protentions*, similar to Stiegler's logic of *tertiary retentions*, *memory in-making* would be tertiary *protentions*. Imagination, speculation, ideas of the future that are exteriorized by making, are just the advance of the future but at the same time the past coming back in the present *as* future.

In the same way Stiegler extends Husserl's dynamic structure of *retention*, I am extending the dynamic structure of *protentions*, by *memory in-making*. When what is made is complete and experienced, it is already past, and it is Stiegler's

*tertiary retention* or technics. I will add that technics is just technological when it has capacities to anticipate the future.

Scrutinizing this idea of time-memory, I can propose that it is what is *in-matter* that allows us to refer to materiality as dynamic as part of life itself, the capacity of creating a time space that defines becoming. So if technics is the border between the interior and the exterior, *in-matter* is the interior in the exterior that extends to the interior. I can still read it diffractively with Barad's ideas:

The existence of quantum discontinuity means that the past is never behind, never finished once and for all, and the future is not what will come to be in an unfolding of the present moment; rather the past and the future are enfolded participants in matter's iterative becoming. Becoming is not an unfolding in time, but the inexhaustible dynamism of the enfolding of mattering. (Barad, 2007, p.234)

### 3.5. Memory in-matter and memory in-making in practice

For the purpose of putting the *memory in-matter* and *memory in-making* in context I am using two of the Creative Exchange projects. 'Physical Playlist' allows me to describe and enlighten aspects of *exteriorisation* and *retentional system* that are present in the dynamics of *memory in-matter*. I am using 'Ageing Playfully', to illuminate aspects of *memory in-making*. My involvement with these projects was in any case experimental. My aim is share my own experience of being part of these collaborations at the same time as thinking about memory, time and technologies under the light of post-phenomenological theories and the de-constructiveness of the logic of supplement.

I am going to elaborate my proposal of *memory in-matter* in the context of making the digital physical. In short the present-past experience of time. I will highlight and challenge some of these aspects in practice using the 'Physical Playlist' project. 'Physical Playlist' was about designing physical interfaces, or digital-physical objects that propose a slowed down experience and practices of curating and preservation.

The last part of this section will explore protention as a capacity of the time consciousness. *Protention*, imagination, speculation and creation as material time anticipation. In short, the present-future experience of time. I will then interrogate these complexities grounded in practice using 'Ageing Playfully' as case Study. 'Ageing Playfully' is a project that explores how digital-physical interaction could boost mobility and wellbeing for people with early stages of dementia.

## Memory in-matter: Physical Playlist

### **Project context**

'Physical Playlist' is a collaborative project between The Creative Exchange at Lancaster University and the BBC Research and Development at Media City that brings designers, technology developers and creative business together to think about potentialities of designing a playable, wearable device that embeds personalizable collections of digital files. 'Physical Playlist' considered designing that allows for physically curating digital files, for a slowed down technological experience (Burnett et al. 2015) and I am going to use it to sustain my investigation on *memory in-matter*.

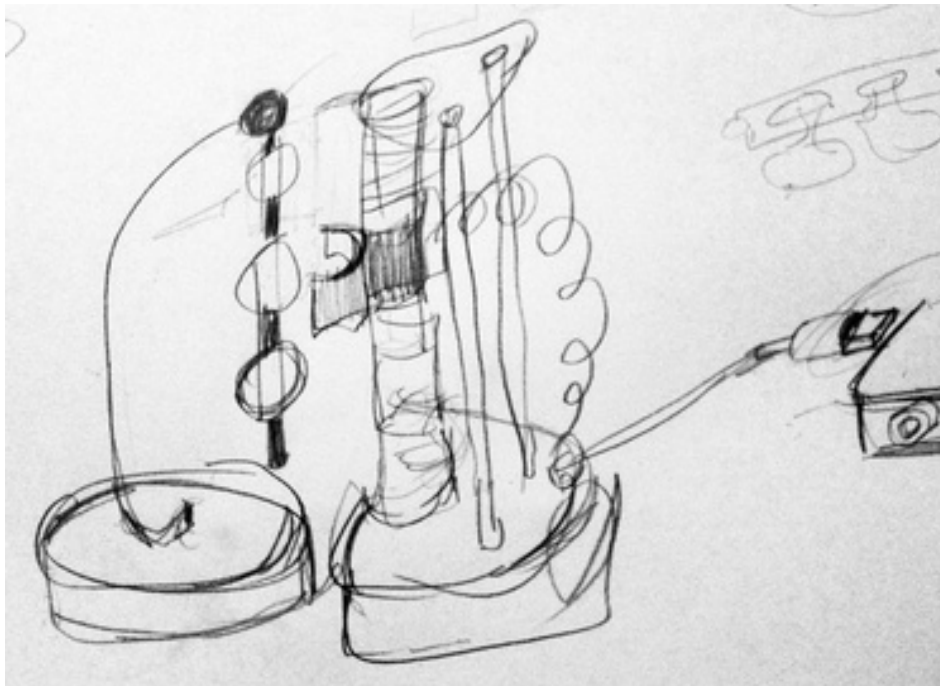
The design aimed for a sharable artefact that objectifies the author's time, effort, taste and subjectivities, with the view that the material object or collection of objects would made a more meaningful gift than the purely digital playlist. The physical object could take almost any form imaginable although the original idea was for a customizable jewellery piece. The core idea was to recreate the concept of the mix-tape using digital content; in this sense the artefact also plays with the nostalgic idea of the retro-technology or post-digital.

### **Project process**

NFC tags (Near Field Communications) were used as the bearer of the playlist, a method of personalizing the tags and then reading them back to play the associated media would have to be created. In this sense the design process is divided into stages; the tags were beaded into a bracelet as a physical file container, and app operator and the physical player connected to a play back monitor. The reader scans the NFC tag, sends data to the Arduino board (that is where the reading of the tag takes place), which in turn passes it to the Raspberry PI where the information from the tag is being decoded and from there the algorithm type (in the form of <s,6JEK0CvvjDjjMUBFoXShNZ>) decides where to fetch the data from in the computer. The utility of the App was to interface the initial writing of the data to the tag, it can also be used for re-writing the tags so playlists can be edited on the fly to personalize them even further. The player has the potential to play a variety of different media types from different services, for the ends of this project the media embedded was from YouTube, Spotify and BBC iPlayer (Burnett et al., 2015).



Inspired by this idea of time delay, the player is being designed to read the bracelet from top to bottom using a rotating rod that moves a plate. The playlist begins to play when the first tag is scanned and the arm continues to move down the playlist scanning until it encounters the next unread tag. This is then added to the playlist and the player ceases its movement until the previous track is completed. The player is connected to a playback screen on the monitor.



*Figure 21 Sketching the Physical Playlist. The Creative Exchange.*

For the research team, the order of the files that form the playlist was crucial and the player was designed in response to an idea of respecting the author's order. In essence, the design emulate the pre-digital, skipping typical digital listening options, such as shuffle, skip or repeat. The process of curating the playlist and physically placing the tags into the bracelet created a slowdown experience allowing the author to thoroughly anticipate the future of the experience, time-by-time.

## **Memory in-matter and memory in-making**

In summary, the dynamic of *memory in-matter* is the integration of Husserl's *retentional* system for the interior perception of time and memory, completed by the exteriorized dynamic that is mirroring the internal, presented in Stiegler's *tertiary retentions*.

My proposal is to complete the time experience dynamic even further with the exteriorization of *tertiary protentions*, in the act of inventing, creating or curating a future experience; *memory in-making*. I am going to de-construct every element of the Physical Playlist experience according to the corresponding post-phenomenological elements that I have previously elaborated:

### *The temporal object*

In the Physical Playlist each of the digital files that made the collection, for example an Spotify tune; 'Blue in Green' by Mile Davis, is in itself, what Husserl called a *temporal object*.

I heard 'Blue in Green' for first time two years ago, while I was in a period of separation from my partner, he sent the tune to me. I felt sad, even heartbroken. Grasping at the song, I heard not just 'Blue in Green' by Mile Davis *out-there*; it rendered with my internal feelings of sadness about separation that integrated with it, conforming the first retention that Husserl explained in the internal phenomenology of time experience.

### *Retentional system*

My partner and I are now back together. When we listen to 'Blue in Green' it means at the same time the sadness of the period of separation and the happiness for the followed period of togetherness, both feelings stored in the

same song, *within* the song. Every time I hear the song it plays back to me “Blue in Green’ and the accumulation of all the stored memories, to render a new experience of the song. In this sense, I do not remember just the song but I remember, me remembering the song, every time. A memory of all the memories sinking down into consciousness, are what Husserl called *secondary retentions*.

#### *Exteriorization of tertiary retentions*

Primary and Secondary retentions are in me, in my *interior*. When I decide to share the song as part of the Physical Playlist, internal retentions exteriorize to be impressed in the bracelet together with other songs that are meaningful to our relationship. ‘Blue in Green’ by Miles Davis within the Physical Playlist is what Stiegler called tertiary memory, and what I posit as *memory in-matter*. The Physical Playlist is both one’s memory in-matter and also, other’s temporal object.

#### *In-formation*

The Physical Playlist that I curate will be at the same time my exteriorized memory and my partner’s temporal object; when he experiences it. ‘Blue in Green’ travels out of my interior to the exterior carrying all my stored memories, and when my partner listens to it, it becomes a temporal object sinking in his interior. I propose to call this an interior-exterior *dynamic foldable-(dis)continuum*, because of this capacity of *memories in-matter* to be internal temporal objects and exteriorized memories, simultaneously. The mere fact that *memory in-matter* is at the same time in the exterior and in the interior means that exterior and interior are of the same essence – materially differentiated.

This illustrates Gilbert Simondon's theories of individuation and his idea of material differentiation as in-formation.

### *Identification*

By choosing 'Blue in Green' from the 27 000 songs I currently keep in my Spotify account to be in the Physical Playlist tag, I am embedding not just 'Blue in Green' the digital file but also a part of my memories, and so, part of me. Such an identification occurs only and just by exteriorizing 'Blue in Green' memories – and not others. I am identifying with the song; at the same time I make the Physical Playlist I make sense of my relationship and myself. If I had chosen 'Crystalline' by Björk instead, my partner would recall a different memory and so a different definition of our relationship and me. As such I can understand when Stiegler affirmed that the *who* is defined through *what*, and the transductive relation that Simondon describes in which any elements of this relation would not exist without the other.

### *Transduction*

*Transduction* will define the *who* and the *what* as poles of the interior-exterior continuum. These poles are co-constitutive by the in-formation of the *who* and the *what*. How to find the precise point in which *who* cease and *what* begins? Where are the borders? Mackenzie (2002) beautifully solved this '*aporia of the origin*', by proposing that the border is invented/ing.

### *Technogenesis*

The 'Physical Playlist' defines me at the same time as defining its own experience. By inventing songs, recordings, digitalisations, streaming programs and 'Physical Playlist', culture is able of momentarily fix the poles of who and

what respectively, into a point of time, into a point of the three-dimensional time-memory. *Who* and *what* are going to be encountered/defined, *who* and *what* are going to become by the folding of this *dynamic (did)continuum*, within the folds. *Transductivity* means that the poles, the *who* and the *what*, will always look for meta-equilibrium opposing poles, because is in the difference, is the binding, that each can define or identify with respect to the other.

### *Time*

Exteriorizing the 'Blue in Green' *memory in-matter* meant that the song has something of me *in* it and something of 'Blue in Green' in me. That something that is embedded with the Physical Playlist in the exterior and with some interior definition of myself, that something that is in-forming the Physical Playlist and that is in-forming me, that something *in-matter*, I propose, is time. I am going to define time as the double directional flux within the interior-exterior *dynamic foldable (dis)continuum*.

### *Memory in-matter*

'Blue in Green' is me in the past, at the heart-breaking separation two years ago, is me in a recent past, remembering the past separation, is me being together with *him* again and also is me in the moment, the exact moment when I chose 'Blue in Green' over all my 27 000 songs of the Spotify account to be part of the Physical Playlist. All past memories are stored and impressed in the bead that forms part of the bracelet. That is *memory in-matter*.

### *Memory in-making*

I decided on 'Blue in Green', selected the song, added it to the playlist, selected other songs; Billie Holiday, Chet Baker, a photograph of Cornwall, a recipe of the

perfect gin and tonic, in between other files to conform the playlist-bracelet. With these selections, I am creating a future experience for my partner. I am exteriorizing memories and at the same time creating a future temporal object. Embedded in the Physical Playlist, is not just past memories, but the present anticipations, hopes and emotions of a guessed future that I put into curating the playlist. In the object is not just the past – memories – but also the future. In essence, I am making time, time in-matter. I understand this as the exteriorization of Husserl's *protentions*. This means that the Husserlian system does not just mirror its *retentions* in the exterior but also the *protentions*, or the future anticipation. I call this *memory in-making*.

## *Memory in-making: Ageing Playfully*

### **Project context**

'Ageing Playfully' was a collaboration of The Creative Exchange Lancaster University and Age UK Lancashire that brings academics, designers and artists together with people with early stage dementia, their caregivers, and Age UK community workers involved in their care.

This project proposed the creation of ludic space in which researchers and older people with dementia had the opportunity to imagine and design together for mobility and wellbeing interventions that could potentially improve their quality of life and at the same time, empower them to become designers themselves. Who better to understand the values, needs and aspirations of someone with dementia than those with dementia? Through a series of playful activities and by fostering creativity, motivation and imagination, participants were facilitated to evolve ideas to create plans and models.

The main idea was to explore issues of mobility and wellbeing with participants by creating together 2D and 3D models. The models would be used in a second stage of the project, to inspire prototypes of digital-physical ludic artefacts.

The workshops were set up within the context of an existing weekly drop-in activity, run as part of the Age UK Lancashire 'circle of support' initiative, where people with dementia could be given the opportunity to get together and thereby stimulate social interaction in the group. The project team encouraged interaction in two other ways outside of each immediate workshop session. First, each participant was sent a postcard with a picture of the 2D or 3D model they had been involved in creating. This helped each person to remember the previous activities and their part in the model building in their groups, and also to be reminded of the next workshop. Second, following the session, after the participants' lunch break, the team showed them the models again and everyone was reminded about the session, and they could share and give some feedback.

### **Preliminary research design**

Prior to the co-design workshops, researchers spent time getting to know all the people attending the circle of support based at both Dolphinlee House and the Neuro Drop-In in Lancaster during weekly sessions. Importantly, this meant those attending the circle would also get to know the researchers. The circle sessions tended to alternate activities such as singing along and dancing with reminiscence conversations.



*Figure 22 Age UK Lancashire Circle of Support weekly session at the Neuro Drop-in Centre (Lancaster). The people attending the circle were keen on tactile props, such as textiles with different textures and colours.*

I participated in these sessions for approximately 3 months prior to the workshops starting. I had no prior experience working with people with dementia. This period of getting to know those people attending the circle was essential. This also helped me to dispel preconceived ideas about how people with dementia behaved and what they may need. Indeed, I realised that it is not always obvious that someone has dementia, particularly when they are at a relatively early stage in the disease. From this time together, some key points emerged which informed the ways the team designed the workshop sessions. I am going to narrate the aspects concerning the material and the in-material aspects:

- The people attending the circle were keen on objects they could handle, such as textiles with different textures and colours. They liked to touch, squeeze and hold textiles or soft toys.



- They greatly enjoyed chatting, catching up, and sharing stories and memories one and another time, with other friends from the circle.
- The group was full of brilliant minds! People talked about having done astonishing things in their lives, and some talked of amazing careers; as professional dancers, gardeners, photographers, or they had worked in the theatre or been in the military. Each person had a unique talent and most loved to tell anecdotes, I had the opportunity to meet the first woman to get a driving licence in the whole Lancaster-Morecambe area.
- Tea and biscuits were the favourite part of the session and having fun was most important!

My own way to understand the experience of memory related problems of people with dementia was by visualizing their retentions in a bookshelf. The more recent memories are stored in the highest part of the shelf and the oldest memories in the lower shelves. Dementia goes messing up shelves from top to bottom, so participants tended to “remember” better older events, people and places and had more difficulty remembering the most recent events, including what appeared to have happened immediately. During that first part of my participation in the group I had to introduce myself – sometimes several times – in every session.

## Main activities in the workshops



*Figure 23 Workshop Two, "Our very own garden": co-designers modelling their 'dreamed' gardens, garden activities and features.*

### Collaborative collage:

This activity was useful when setting up the project, providing a tool that participants could use to map out themes around their 'favourite things', and that offered direction to the project.

### Collective modelling in small groups

Collective modelling was inspired by 'rapid prototyping' techniques to quickly create a scale model. The 3D modelling was not only collective as a process but the fact it was hands-on. It seemed to be a way co-designers could open up imaginative narratives via the modelling materials. The tactile element of the activity was a definitive feature by which participants could explore and play

with different materials and objects. This demonstrably was a very engaging method of connecting with people and their ideas, allowing them to go beyond conversation into the visual image and tactile 3D model. Material modelling, thus, resulted in the activities being highly participatory and inclusive, and this approach managed to engage even the more introvert workshop participants.

### Materials

Modelling activities employed a range of materials. The variety and the simplicity of the materials, the ludic, playful and colourful range of textiles and plastics invited rich and immediate responses, with participants wanting to touch, rattle, build and combine materials. Using foam boards as the model base, the favourite materials were Lego, plasticine and textiles with different textures and colours. The resources also included 'Little People' Lego toy characters, tins, cans, sticks, spoons, pans, plastics pots, small glasses and cups, glue, pins, feathers, strings, elastic bands, inflatable balloons, stickers, bottles and beads. The selection of the materials tended to exclude pre-made or excessively instructive resources, favouring simple, playful and fun ones.

### Emerging narratives: imagining, abstracting and representing

Providing the range of modelling materials encouraged the groups to agree that one or another object would represent different things, and that it would be perfectly acceptable to change an object's meaning in combination with other materials. Changes in scale and colour led, at times, to humorous situations and so the stories would develop and transform, inspiring co-designers to immerse themselves into some intricate representations with fully developed storylines.

Personal experience: what is it like to work with participants with dementia?

Facilitating 'Ageing Playfully' co-design workshops, without any previous carer training or experience of dementia, was an incredibly stimulating and rewarding experience. Participants received the workshop activities with enthusiasm and they expressed enjoyment attending the workshops every week. Engaging with people with early stages of dementia in a creative way, as well as bringing back their prototype designs to the design studio and thinking about how to develop these, was not just working towards the specific deliverables of the project. The process also meant facilitating social inclusion and wellbeing around people with the most need.

The 'Ageing Playfully' project experience suggests that an emphasis on personal stories, on individual identities, and the value of people's ideas, can potentially seem to have an impact not just in the quantifiable aspects of care, but in what it *means* to suffer from dementia. Participants as co-designers expressed enjoyment and enthusiasm, when given this opportunity to engage playfully with each other in imagining and building models. Their carers and support workers noted how the workshop activities seemed to encourage interaction, with even the reticent, less confident members of the group joining in with the model building.

## The project outcomes were two-fold:

### 1). A Playful Plug-n-Play Music Board



*Figure 24 A Playful Plug-n-Play Music Board: percussion board co-designed by Ageing Playfully Participants*

One of the most interesting findings of the project was that by creating an original musical model instrument, participants as co-designers were able to remember how to build it again in the following workshop session. Also by tapping and pressing buttons, pulling and squeezing materials on a playful music board has the potential to encourage mobility and imaginative individual and social engagement. This also mediated reminiscing of melodies, songs, anecdotes from older times and from the past sessions. It meant that the act of making exercises memory in a way that participants as co-designers accessed both older and more recent memories.

In this sense, one of the ideas of 'Ageing Playfully' for next phase of the project is to develop a prototype for a "Playful Music Plug-n-Play Board" based on the models developed in the co-design workshops.

*2) A Co-design Kit:*

Consisting in a set of materials and tools, strategies and recommendations that would help the facilitation of playful making activities within similar groups of people who suffer from memory and cognitive impairment. This outcome does not aim to be a finished product, but rather a toolbox for caregivers and professionals to facilitate other co-design experiences.

Importantly carers and professional workers noticed how participants were looking forward to the workshops and family members noted good moods in the participants after 'Ageing Playfully' activities. When participants received the postal with the photograph of the models, they could recount how they made the model and anecdotes from the workshop. Participants had positive responses to creative and playful activities, imagining and making stories.

In the audio recordings of the first sessions, it was noted that participants just participated and engaged with the activity when a facilitator was present. As soon then facilitator left the table participants went quiet. By the last sessions, participants did not need a facilitator present to engage with the activities and wit others; they made, played even without the presence of the facilitators. Participants kept on telling stories to each other related to the activity, but also personal tales that were triggered by it. In the last workshops it was noted that as soon as they arrived some of the participants asked, "what are we making

today?”. This showed that they recognised the space and remember their activities with enthusiasm.

The original aim of the project was to come out with one or various models to inspire the digital-physical prototypes. However, the surprising aspect of the research was the realization that, more than an artefact, the wellbeing and mobility of people with early signs of dementia will benefit significantly by collective making activities. The human contact, the social activity, creativity, shown to be more important in the wellbeing of the participants.

### **Memory in-making and tertiary protentions**

The experience of ‘Ageing Playfully’ allows me relate to some of the aspects of *memory in-matter* and *memory in-making*. The experience of the workshops let me think again about the processes of becoming through exteriorization of memories to impress *in-matter*. What is interesting about the project analysed under the deconstructive perspective, is that participants as co-designers exteriorized memories that they could not access otherwise. Somehow the making activity was exercising some part of their memory system that enabled them to recreate a garden, to sing a full song, to compare their model house with the own homes, to repeat models of an instrument in the next sessions and perfect it. These elements of ‘Ageing Playfully’ can be viewed from the perspective of the Husserl-Stiegler internal-external *retentional* system.

In ‘Ageing Playfully’, imagination and creativity are activities of protentions and anticipations. By imagining future experiences, participants in the workshops were able to exercise and access retentions, including ones that were apparently previously inaccessible.

In the first sessions and in the preliminary research I noticed that prompt questions, even the simplest, could be problematic for participants. For example, asking what is your favourite colour, or your favourite musical instrument, could be a cause of extreme confusion and anxiety. I recall that I asked a participant her favourite colour, and she got very upset, asking her carer and her peer from the group what was her favourite colour. I understood this as a sign of distress because it is very important to remember basic aspects of our identities. It is terrifying to not be able to remember one's favourite colour or the musical instrument one most enjoys, because by not remembering that one is forgetting part of one self.

By making, in the flow of the activity, participants get to choose in between many colours of fabric, a colour of their taste. After talking about her choice, and without seeming to make an effort, the same lady told me she did all her flowers in purple because she really liked purple and also told me about a dear purple dress she remembered wearing to a professional dancing competition. These sorts of experiences led me to think about *memory in-making*.



## Time-memory (dis)continuum

Understanding time in a *dynamic foldable*, material and in-material, *(dis)continuum* is a powerful analytical device with which I can make the following claim:

**Past, future and present are all possibilities of the now.**

### *Past*

Capacities of consciousness to retain experiences of events but not the event themselves; one does not remember what happened but the very first *retention* collected as memory of the event. That first *retention* grows, develops and changes to breed a memory. Memories are unstable, contested and constantly re-shaped in a internal continuum of modification and affected by the next experience or situation in which they are recalled; Simondon's *milieu* or Stiegler's exterior. One does need to stabilize memories, let them matter, by exteriorizing one is on an on-going process of identification and individuation. *Memory in-matter* then is a human response to an inherent life instinct to deal with death, to remain in time, to build identities, history, facts. *Memory in-matter* co-constitutes beings becoming. Techno-logical memories have generative powers, they do invent beings as beings invent them in a *transductive* relation.

### *Present*

*Temporal objects* or the already-there, are already techno-logical. Beings and technics in *transductive* relation, one becomes at the catalytic encounter of the other taking form. Technics is originary, what Stiegler technogenesis, one reading *agential realisms* can call it agencies of the sociotechnical *apparatus*. According to Stiegler, technogenesis is faster than culturegenesis. Beings become

within a technological *milieu*. One time experience is its internalization of technological memories. It does not suggest that beings are becoming technological or immaterial. Instead beings keep responding to the originary instinct of exteriorizing as a way to defeat the mortal condition and as metastable beings, to look back for a meta-equilibrium. The exteriorizing memories of the hybrid *who* that is form with the *what*, are going to be impressed in hybridity. The identities are unstable, the polarity is dynamic.

### *Future*

Husserl explains that the three axes of the experience are *retention*, *protention* and *self*. Consciousness has same capacity to retain as to anticipate. Imagination, speculation, creativity are forms of material anticipation as memories and material narrations of time are forms of *retention*. *Retentional* capacities of consciousness have been favoured over *protention* and anticipation. With this articulation of ideas, I make the point that the present experience of future is susceptible to exteriorization in the same ways that Stiegler proposes that the present experience of past is externalized.

Time experience is not mediated, either by consciousness, or by a technological system of objects or mementos. On the contrary time is what relates us with consciousness and with technology. Time experience is *in-matter* and *in-making* at the same time that is in becoming conscious of our own humanity. That is why it is so difficult to understand time separated from other instances like space, being or matter.

In short, I can essentially extract two core ideas of this post-phenomenological de-construction. First, in the same way that one exteriorizes retentions as

tertiary retentions or *memory in-matter*, one can exteriorize protentions, that which made of the one creator of future experiences, and that I will define as *Memory in-making*.

Secondly, my own definition of both *in-matter*, and time experience; what is in matter that means it is dynamic, agential and originary, is time. Time and just time will be then, the flux of memories, from internal to external, the grasping temporal objects from external to internal, and the making objects with generative of future experiences.

## Inventory of words that matter n.3

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- *Agency*

Agency is about changing possibilities of change entailed in reconfiguring material-discursive apparatuses of bodily production, including the boundary articulations and exclusions that are marked by those practices in the enactment of a causal structure. Particular possibilities for intra-acting exist at every moment, and these changing possibilities entail an ethical obligation to intra-act. (Barad, 2007, p. 187)

This chapter intention was to go deeper and slower in the Baradian idea of *agency*. What is *agency*, how do *agencies* entangle human and non-human for a constant re-configurations of the world? I wanted to look carefully in between the “intra” and the “action” of that *entangling intra-action*.

By reading diffractively Simondon and Stiegler, I propose that what is *in-matter*, the doing, the causal structure, the agency, are memories travelling through *(dis)continuums* of internalization-externalisation. I propose to contribute to the Barad’s idea of *agency*, to propose it as the programmatic code that is in *memory in-matter* and *memory in-making*. Agency as temporal mattering.

- *Temporal Objects*

According to Husserl (1991, p.24) *temporal objects* are the “raw” or “given” present, also the generative now. They are described as non-material objects that are not only material unities of time but also contain temporal extension in themselves, for example a piano tone. What Stiegler describes is that the *temporal object* is not “raw”, the *temporal object* is already technical; someone had to play the tune on the piano. Someone else had to memorize it, learned it,

learned the technique, have access to a piano and play it, in order to be internalized. What Simondon describes is that temporal object is not “given”, they embed and enact programmatic codes to constitute a new experience and be the product of an anterior experience, all at the same time; someone else listened to the tune, and replayed it as a whistle. I am proposing *temporal objects as memory in-matter*.

- *Retentions*

According to Husserl (1991) *retention* is the dimension of the now that recollects. Husserl distinguished *retention* from memory because the memory is always experienced as past while *retentions* are experienced in the now as the main process of perception. *Retentions* are made by a mass of a ‘continuum of modification’. The temporal object itself, *out-there*, is fixed by the *retentional* system but as soon as it is grasped consciously, it conjugates within a continuum modification, transforming it or dying or dipping away, sinking in consciousness. *Primary retentions* are always in the present in the moment, in a sense it is the intuition of the past.

- *Primary and Secondary Memory*

Memories are the experience of the past in the present. *Primary memory* is just the grasping of the *temporal object* already internalized and objectified. *Secondary memories* are the rendering of the *primary memory* with the present moment in which it is recalled and rendered into language. Husserl (1991) explained how the *retentional* continuum of modification and re-representation is in work to keep *secondary memories* in an ongoing process of re-edification.

- *Tertiary retentions, memory prosthesis: memory in-matter*

The very intuition of the past but not the past *in-matter*. For Stiegler this is a supplementary memory, are physical impressions of the *temporal object* insert in the exterior. *Tertiary retentions* are assimilated into the *retentional* system inserted in the same *retentional* system of continuum of modification but towards the exterior and into matter and that I have posited, as *memory in-matter*.

- *Objectification*

Objectification works within Husserl's continuum of modification. It is the basis of perception. It is the act of making sense of the moment, the understood moment is always in the past, by breeding the past one also breed the future. The processes of objectification form the object perceived by rendering past, present and future to produce an object "afresh"

- *Exteriorization*

It is the objectification in the exterior, a continuum flux of materializing time experience as *memory in-matter* or *tertiary retentions*, what Stiegler called *prosthetic* or *supplementary memory*. By exteriorization differentiation become temporalized and living and matter become part of the same process.

- *Protentions*

Within Husserl's tri-dimensional dynamic *retentional* system, the experience of the present is conforming by *retentions*, that are about the past and *protentions* that have to do with future. *Protentions*, the parallel process of *retentions*, are the anticipations of the future in the present time. These anticipations are different

to hopes or desires. *Protention* is the act of the present perception that allows anticipating now, within the right moment of the experience.

- *Memory in-making*

In the same way that Stiegler proposes a mirror system of the objectification but in the exterior or exteriorization in which is constituted supplementary *tertiary memories*, or as I posit, *memory in-matter*. I propose that *protentions* also are inserted in the same process of exteriorization to constitute *memory in-making*. Through invention, speculation, imagination and playing one is preparing future experiences, proposing an imaginary that is going to be rendered with action into the materialization of the future.

By exteriorizing *protentions* the future is not just anticipated but actually programmed. This means that the system of *(dis)continuum* of modification bred past from future in the present, producing not just the differentiation of *matter* and *in-matter*, but the individual and the social, the self and other. This generative differentiation, is an on-going process of becoming by “cutting-together-apart in one move”, that constitute by losing, leaving always a sense of incompleteness. The sense of incompleteness, *in-matter*, it a vital fuel, it is the infinite potentialities of completion and the endless impulse of completion.

- *Transduction*

The idea of *transduction* is going to be key for my diffracted readings of Simondon, Stiegler and Barad, that let me to propose a process that *entangles* internalization of *temporal objects* and the externalizations of *memory in-matter* and *memory in-making*, is a process of differentiation and many dissimilar

entities becoming in the same process; one-other, time-memory, matter-in-matter.

*Transduction* is the relation that constitutes these terms, meaning that a term in the relation cannot exist outside of that relation, and is constituted by the other term of the relation therefore consists in a problematic tension that is resolved through the appearance of a new dimension, invention or individual. *Transductive* processes conceive beings becoming and *matter* taking-form, *information*, emerging though the same originary tension

- *Polarizing membranes*

The *polarizing membranes* plays a key role in this processes of individuation, Simondon is looking at biochemical systems of crystallization, taken from then the name of *membrane*, but thinking in socio technical sets. The *membranes* are the borders of human an nonhuman, of one-other, past from future and interior-exterior. *Membranes* are generative. *Membranes* fold creating temporal interiorities and exteriorities, and time. In Chapter Four, I am elaborating on Simondonian membranes as permeable enacted borders, grounded in practice and diffracted with Barad's ideas of the *discursive-material apparatus*.



Interlude.

*Dynamic foldable (dis)continuum*  
- figuring dps

## *Dynamic foldable (dis)continuum*

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### - figuring dps

#### **Methodological order**

I imagine the reader is by now probably curious -or bothered- of seeing titles of chapter filling the table of contents and structuring the thesis, with a figure I have not explained yet. Thanks for staying with me on *dynamic foldable (dis)continuum*. It would be hard to describe this without the notions introduced in the last chapter. I propose now to pause now and discuss the figure of *dynamic foldable (dis)continuum*.



*Figure 24 Peter Cicciariello's 'Bird in a basket' @ <http://aocollage.blogspot.co.uk/>*

#### *Figure*

I use the *figure*<sup>37</sup> in Claudia Castañeda's sense (2002), as a semiotic-material analytical tool that helps me to unpack meaning making and its material qualities

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<sup>37</sup> C. Inventory 0.

and reorganising it into the *figure*. I am going to weave my discussion with images, for the reader to construct its own idea of the *figure* with attention in its material qualities. But the representations in the images are problematic, for me, *dynamic foldable (dis)continuums* are in movement and on-going reshaping, the images are just a *memory* of this movement, but not the movement in itself. This *figure* is about, traffic, force, agency, time, the images are just a material trace of this traffic. Nevertheless, I insist on the images-traces, because I am conscious that it is a *figure* hard to grasp. I have on front of my desk a pin board with many images of *dynamic foldable (dis)continuums* and they did help me to understand the folds, bifurcations, separations and encounters, the *matters* and *in-matters* they produce. This images are also connecting, you, here reading the printed version of what I am writing, at my desk while looking at the same images imagining our relation as *dynamic foldable (dis)continuums*.

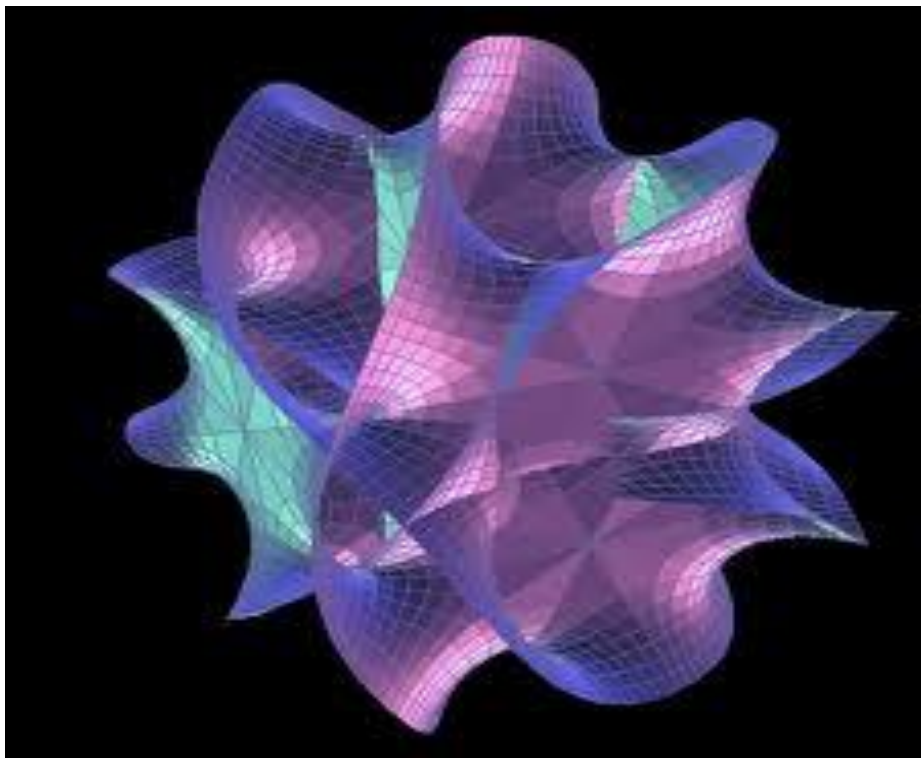


Figure 25 From String Theory in World Science Festival @ The Official String Theory Web Site

### *Continuum*

The idea of continuums comes about to highlight *dps* principles of coexistence. It is not about *digital public space(s)* delimited, like cyberspace used to be. It is not on top of the physical space, neither under digital space, it is both; digital-physical and in between an infinite gradient of possibilities. It is not totally public or private, but public-private, and it is not in space or at specific place, is in the tension of space-place. The continuity refers to an internal creative tension of modification at perceiving the exterior; *in-matter*. An external creative tension of modification in concretizing the interior, *matter*. The continuity does not refer to the predictability of measurable even spaces, but rather to a generative tension and continuity of changes.

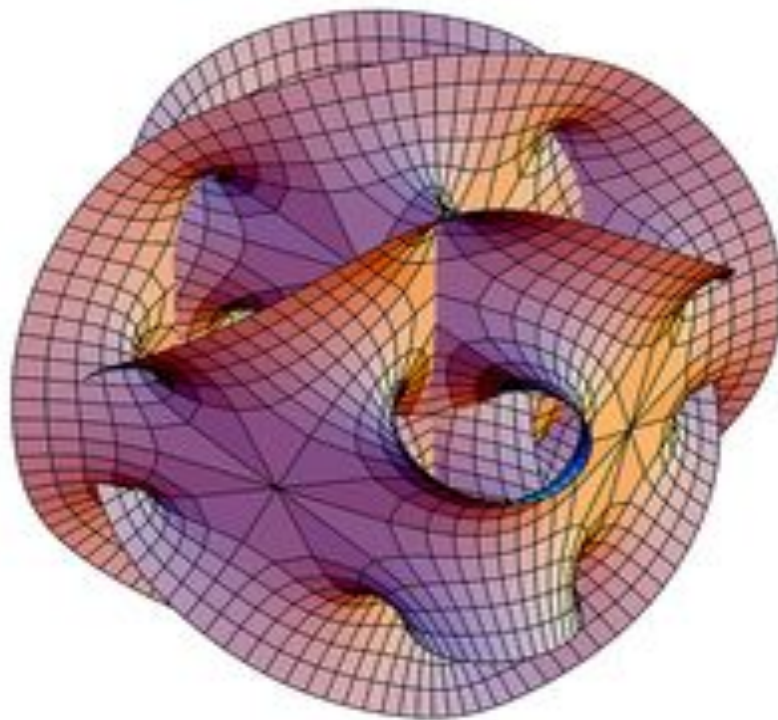


Figure 26 Calabi-Yau Space @ <http://mathworld.wolfram.com/Calabi-YauSpace.html>

### *Dynamic*

The continuity is not in between static poles. The poles are unidentifiable, indefinite. The dynamism is produced by the poles in movement and of unstable identity. The polarities become in the encounter, are completely relative and dependant of the encounter. The polarization is temporal, it is constituted through the encounter at the same time constitutes the encounter. Dynamic polarization as described by Simondon, responds to affectivity, to a resonance. A particular form of resonance that happens not of sameness but in between dissimilates and despairs. This disparity is continually changing and provoking encounters of poles of changeable identities.

### *Foldable*

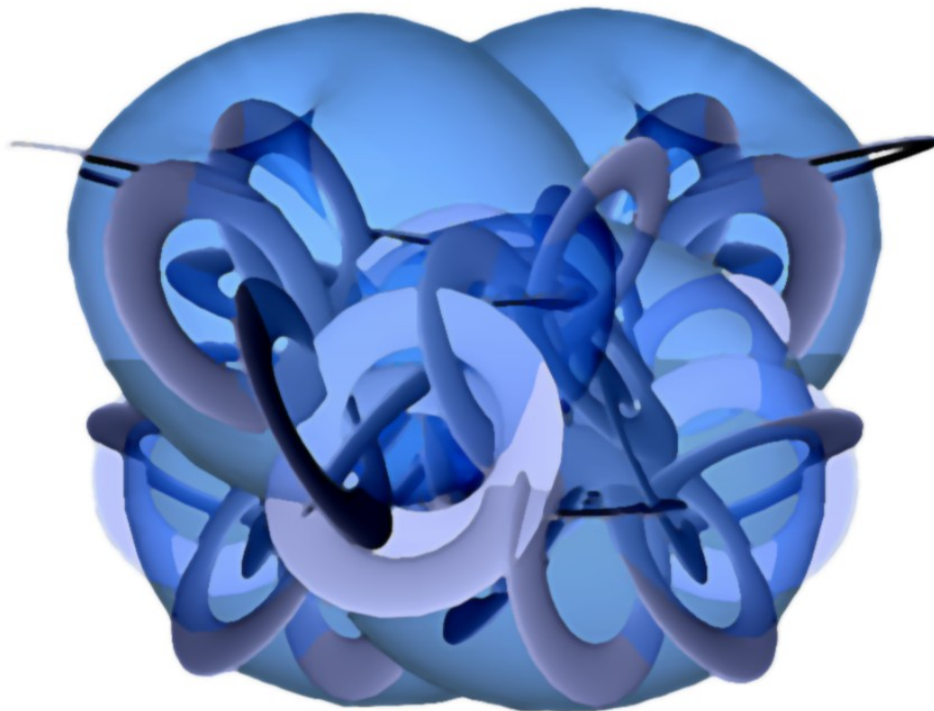


Figure 27 Calabi-Yau Space @ <http://mathworld.wolfram.com/Calabi-YauSpace.html>

There is no geometrical relation of absolute exteriority between a “causal apparatus” and a “body effected”, or an idealistic collapse of the

two, but rather an ongoing topological dynamics of enfolding whereby the spacetime-mattering manifold is enfolded into itself. (Barad, 2007, p. 177)

In Chapter Three I introduced the idea that these continuums are foldable. It is to do with internal system of time perception and external system of *memory in-matter* as part of the same continuum of modification which folds and refolds. The folds are temporal, not just because they are non-static, but more importantly, because they are time in itself, and in between the internalisation and exteriorizations of the manifold topologies, space is created, and life happens. Every *time* that the continuum folds it creates a new set of multiple poles and a new *time-space-matter* experience that is within the fold, *in-matter*.



Figure 28 Renée Lerner at Walter Wickiser Gallery @ <http://artefuse.com/2015/01/21/masumi-sakagami-renee-lerner-and-judith-shah-at-walter-wickiser-gallery-123859/>

This difference between interior and exterior is temporalized within lived temporality and within emerging exteriority, and actualizes the threshold of the living by unfolding in the real the different between matter and memory, past and future. Life emerges as a fold in the tissue of matter. (Simondon, 2005, p. 317)

### *Discontinuity*

Simondon's idea of discontinuity is linked with the hypothesis of simultaneity of many phases of being, considering according several phases of being at once, is to do with the plurality potential of being. This is the being, has the potential for simultaneous identities, it is just by becoming that possibilities are individuating, into a singular, but the unity of all possibilities will remain a possibility in the ongoing process of individuation. Barad present the principle of discontinuity in quantum terms:

'Quantum', 'discontinuity' – each designation marking a disruption, bringing us up short, disrupting us, disrupting itself, stopping short before getting to the next one. A rupture of the discontinuous? A disrupted disruption? A stutter? A repetition not of what comes before, or after, but a disruption of before/after. A cut that is itself cross-cut. A cut raised to a higher power forever repeating. A passable impassability. (An irresolvable internal contradiction, a logical disjunction, an im-passe (from the Latin a-poria), but one that can't contain that which it would hold back. Porosity is not necessary for quantum tunnelling – a specifically quantum event, a means of getting through, without getting over, without burrowing through. Tunnelling makes mincemeat of closure, no w/holes are needed.) A possible impossibility, an impossible possibility. An ontological im/probability.

Identity undone by a discontinuity at the heart of matter itself. What spooky matter is this, this quantum. Barad, 2014, p. 178

I am referring as a *(dis)continuum* a nature of simultaneous continuity and discontinuity, “dynamic rationality between continuity and discontinuity” (Barad, 2010, p. 210)

According with this figure of the *dynamic foldable (dis)continuum* entangled topological system, *digital public space(s)* phenomena emerge from the re-folding of *time-space-matter (dis)continuum*, or like Stiegler posits, a *redoublement*, in which extremes merge because one of the poles is more powerful, faster, or bigger than the other, in this point of the re-fold is constituting an opportunity for performing new frontiers and encounter with excluded, the exterior in the interior.

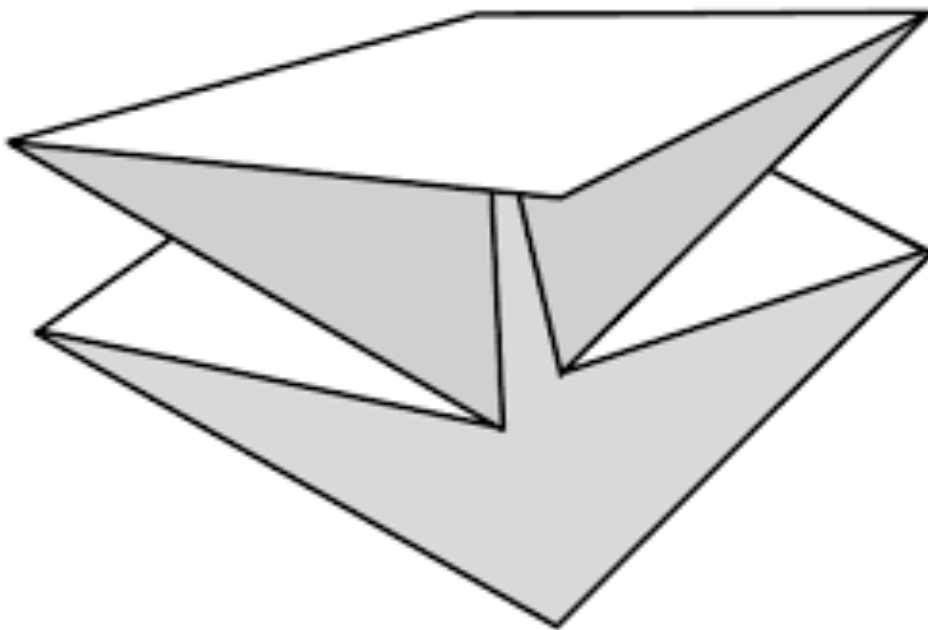


Figure 29 Image of the 'preliminary fold'  
in <https://commons.wikimedia.org/wiki/File:Preliminary-fold.svg>



*Dps'* more palpable characteristic is that the digital and physical poles, previously separated by material frontiers, the computer screen, the machine, have folded into each other, thickening a *space-time-matter* in which the digital is experienced pervasively and mattering, those also repositioned one-other, internal-external, time-memory, human-nonhuman. The relocation or disorientation of poles in between folds, or like Barad says, (re)turn, produces an experience that is proposed not just as anew but with creative potential.

For the purpose of the thesis I will discuss three *dynamic foldable (dis)continuums*; digital-physical, public-private, and space-place. I have to clarify that this selection is merely for methodological order and is not pretending to encapsulate the phenomenon. If the spectrum is tri-dimensional and the poles are dynamic the relational *(dis)continuums* possibilities multiply, the capacity of enact them depends on the position, like a constellation. My quest is to map *digital public space(s)* with the three *(dis)continuums* that I can relate to from my temporal position.

### **Epistemology figure**

I like to see *dynamic foldable (dis)continuum* also as meta theoretical tension in between Barad's *agential realism* framework and philosophies of technics proposed by Simondon and developed by Stiegler. In this sense, I am giving a shape to the theoretical umbrella of my research in which poles are these two sets of theories, and my ideas are emerging in between them both. At some points I will be nearer Barad, at others to Simondon, in a dynamic alignment. I can see also the relation of *theory-practice* within the same figure and lastly, the

relation of my own voices in this thesis as a *formal-informal dynamic foldable continuum*.



Figure 30 Topological folds

@[http://myweb.facstaff.wvu.edu/talbot/cdgeol/Structure/Fold/Folds1/Fold\\_styles.html](http://myweb.facstaff.wvu.edu/talbot/cdgeol/Structure/Fold/Folds1/Fold_styles.html)

### **A practical framework**

I am not attempting to produce a mirror image of how I see *digital public space(s)*; the *dynamic foldable (dis)continuum*, are mapping some semiotic material qualities, pointing possibilities of overlapping's, resonances, instabilities and ephemeral material and in-material enactments. My intention is to contribute towards a framework to think *in methods* about *dps* practices. How to make sense of encounters, how to evaluate projects and measure insights, if part of *dps* is *in-material*, immeasurable, incalculable, un-representable. I am presenting a malleable mutating animal-framework that responds to the qualities of *dps*

For academic departments, funding bodies and policy makers, measuring impact and evaluating projects to do with hybrid spaces is very difficult, how to map the simultaneously intimate and *vox populi* of the *public-private* of *dps*. The parameters – number of attendees, volume, shape, length – have been shown to be insufficient. *Digital public space(s)* deal with subject matter that does not easily fit into the existing parameters; juxtapositions, temporalities, stories encounters, interactions, possibilities, memories. *Dynamic foldable (dis)continuum* with the set of parameters just described sets a malleable to approach *digital public space(s)* in practice and allows for evaluation, scope, and a narrative of such projects and practices with *response-ability*.<sup>38</sup>

The role of the designer or practitioner is no longer design a product, a service or site, or even the features of that site, it is not to design flexible scaffoldings. What is proposed with *dynamic foldable (dis)continuums* is a practice of designing a process through which encounters can happen, from which *digital public space(s)* emerge and be careful to *matter* and *in-matter*.

By figuring out a framework to approach *digital public places(s)* of entangled and *transductive* net of *dynamic foldable (dis)continuums*, I am thinking on using in practice. Once one is aware of the originary difference, the relation with one's practice and with others actors human and non-human, entangled in the practice, irremediably changes. It opens another dimension and set of values in which uncertainty, for example, is a creative opportunity rather than a research risk or limitation. The *framework of emergence*<sup>39</sup> I am proposing here aims to empower the *dps* practitioner to work within an ever-changing in-out, medium-

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<sup>38</sup> C. Inventory 6.

<sup>39</sup> C. Inventory 4.

message, to perform ever-changing roles-tools. Within the framework of emergence *dps* practitioner acknowledges their own becoming within the interior and exterior simultaneously, emerging in the encounter. The *framework of emergence* includes multiplicity of encounters with knowledge; by making sense of memories, coincidences, serendipities, creative bumping, frictions, efforts, empathies, poetics, tensions, energies, that are not reflected in the data. The *framework of emergence* conceives a creative researcher that dances to the rhythm of this ungraspable malleable mutant animal of multiple identities.

*Dynamic foldable (dis)continuums* allow for the understanding of processes not as routes to a pre-determined output, not about measuring by a grid, but are about allowing the grid to transform, allowing for other ways.



Figure 31 “Plissement” in French also refers to the texture of ballerina tulle skirts.

## Chapter Four

- *digital-physical (dis)continuum:*

Making the digital physical  
and numbers that matter

#### 4. Digital-physical (dis)continuum.

### Making the digital physical and numbers that matter

In the preceding interlude I presented the *figure of dynamic foldable (dis)continuum*, as the semiotic-material tool with which I am considering *digital public space(s)* in practice. I am *diffracting digital public space(s)* into three *entangled (dis)continuums*; digital-physical, public-private *and* space-place. This chapter is about digital-physical, that refers to that digital-physical coexistence or mixed reality that was discussed in Chapter One reading Stikkerr (2011) that for me, is the most tangible or sensorial manifestation of the new domain of existence that *digital public space(s)* proposes.

The digital is no longer a space that one visits, but is the space in which one lives. Meeting in this hybrid space one is equipped with super powers. Able to extend one's bodily dimensions, to know the actual and yonder, to stretch out our senses, to move faster trespassing otherwise impassable frontiers, to navigate to remote places with the teeny tapping of fingers, to keep all the treasures of the world in the pockets and still travel light, to show what do not want to say and to speak to much bigger audiences, all at once. But human superpowers within *dps* have their kryptonite; one is constantly leaving digital footprints in the physical world. Aware or willingly ignorant, one is continuously generating information; endless data traces are left to harvest. Cyber travels, cyber speed, cyber communication, cyber senses, every cyber action and behaviours have a material mark, material situation, material consequence.

Whether useful or scary, I characterise *dps mattering* within a constant origination of connectable information shaping objects, responses, practices and narratives of reality. In this chapter I am studying specifically wearable technologies, as the epitomic of digital-physical dispositive that propose uses and practices that renegotiate ways of thinking about body boundaries, body scale and body capabilities. I am discussing these renegotiations reading Barad (2007) and Simondon (1992) diffractively, and inserted within a generated and generating *dynamic foldable (dis)continuum*.

Digital-physical is dynamic in the sense that its polarities do not stay existing in a pure state, the purely digital and the purely physical are susceptible to become one and the other, those are polarities of essence and identities unstable. It is foldable, as equally going from interior to exterior as from exterior to interior, connecting and disconnecting, dividing and allowing, encountering and dis-encountering, throughout (dis)continuum. Within the hybridity of this digital-physical *(dis)continuum*, connectable information flows forming linked rivers that form the spine of a pervasive structure; small intimate data, becomes big public data and vice versa. Practices of making the digital physical emerge within the *digital public space (s)* dividing and connecting.

I am discussing these connections and disconnections to focus on the (re)negotiations that wearable technologies propose, with the intentions to go back to *think in methods* (Chapter Two) to imagine communities with more agency to connect – rather than disconnect – and with it to workout their own collective wellbeing, within the hybrid experience that *dps* is installing

## 4.1 Making the digital physical

Making data into images, numbers, excel pages, landscapes, interactive surfaces, sounds, gadgets, garments or any other meaningful interface are practices directly responsive to what we have called the *digital public space(s)*. Contemporary crafts interested in grasping data get involved in the making of the internet of things, practices of quantifying self, uses of gradually smaller and smaller mobile sensors, RFIDs, and Arduino modelling, which all join together in a big making culture that has developed towards fabricating the digital. Making the digital physical proposes interactions embedded into objects or landscapes, opening computer network realms beyond the screen's glass and into the physical domain.

Technology exercises with mobile microprocessors and networked beams, smart textiles and garments, responsive clothing, Arduino, 3D printers, milling machines, laser cutting, routers and plotters, are laying out not just a craft but a whole distinct aesthetics of the real. Data translate into dots, sounds, colours, stitches or photos and we assume it as the real: can you see the blue dot moving in your map? That is you! And we believe it, no discussion. Data materialization shows geographical location, movement, levels of pollution, movement, level of glucose in the blood and concentration of tweets in one place. Apart from the evident effect on our experience of the concrete, physical-digital systems are merging aesthetic features of the real and experiences of it, and many other classic frontiers; authorship and commons, private property and appropriation, knowledge production and exchange, physical and digital, arts and techno sciences, objects and the experience of them, but ultimately people and data.



## 4.2. Digital-physical (dis)continuum: as apparatus.

In this section I am going to revisit Barad's notion of discursive-material apparatus, already advanced in the Inventory of Chapter One. I am discussing the Baradian *figure* of the *apparatus*<sup>40</sup> with a triple intention, firstly understanding wearable tech as one of the apparatuses par excellence of *digital public space(s)*, understanding wearables tech as a phenomenon in itself. Finally, I have the intention of reading Baradian *apparatus diffractively* with the Simondonian notion of *permeable membrane*.

Barad in her diffractive way is *cutting-together-apart* interrogations of where and how *apparatus* start, and subject and object finish, formulated by Bohr's quantum theory. With questions of where *apparatuses* start and other *apparatuses* end, formulated by post-structuralism, specifically by Foucault and Butler. In her formulations Barad is specifically concerned with agencies of the *apparatus* in marking such differences and in producing phenomena that they are set to measure.

Barad departs from Bohr's ideas of lack of distinction between the measuring instrument and the measured object. This epistemological and ontological inseparability of subjects and objects, and the help of the *apparatus* in producing the separation is, on the physical-conceptual account, that the ideas have material consequences and that ideas and concepts are embedded into the *apparatus*.

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<sup>40</sup> C. Inventory 1.

Bohr departs from the agencies of the practices of observation:

the assumption that language is a transparent medium that transmits a homologous picture of reality to the knowing mind finds its parallel in a scientific theory that takes observation to be the benign facilitator of discovery, a transparent and undistorting lens passively gazing at the world. Just as words provide descriptions -representations of reality- so observation reveals pre-existing properties of an observation-independent reality. Barad, 2007, p.195

What Bohr takes from quantum physics is very deep and profound, there aren't little things wandering aimlessly in the void that possess the complete set of measurable properties; rather, there is something fundamental about the nature of measurement interactions such that, given a particular measuring apparatus, certain properties become determinate, while others are specifically excluded. Which properties become determinate is not governed by the desires or will of the experimenter but rather by the specificity of the experimental apparatus. (Barad, 2007, p. 19). Bohr's take on *apparatus* to which Barad subscribes is that neither subjects, nor the objects of knowledge practices, can be taken for granted, but are the material specificities of the apparatuses that help to constitute objects and subjects (p. 27).

Where does the apparatus ends? Barad inserts this object-subject indistinction, and Bohr's theories of concepts being embedded in *apparatuses*, into Foucault's power discursive-material explanations of *dispositif*, usually translated as *apparatus*, as 'a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions-in short, the said as much as the unsaid' (Foucault 1980, p. 194).

Where does it end?

For example if a computer interface is hooked up with a given instrument, is the computer part of the apparatus? Is the printer attached to the computer part of the apparatus? Is the paper that is fed into the printer? Is the person who feeds the paper? How about the person who reads the marks on the paper? How about the community of scientists who judge the significance of the experiment and indicate their support or lack of support for future funding? What precisely constitute the limits of the apparatus that gives meaning to certain concepts at the exclusion of others? (Barad 2007, p. 1990)

Barad formulates the idea of apparatus considering both visions; physical-conceptual and (or) material-discursive to posit apparatuses playing a crucial constitutive role. For Barad, they are not mere instruments or devices that can be deployed as neutral probes of the natural world, or determining structures of a social nature. *Apparatuses* are not merely about us, making reference as the constitutive powers of the *apparatus* that Foucault (1980) and Butler (1990; 1993) saw, or *assemblages*<sup>41</sup> that include nonhumans as well as humans referencing Latour's (1983, 1993) accounts. *Apparatuses*, according to Barad, are specific material *reconfigurings* of the worlds in time and in space, in an on-going dynamism of becoming (Barad, 2007, p. 142).

For Barad *apparatuses* are not passive observing instruments. On the contrary, they are productive and part of the phenomena that entangle intra-actions of human and nonhuman, which mere differentiation are partly mark by apparatuses (ibid., p. 199). Practices, meanings, boundaries, and bodies are produced through *apparatuses*. Rather than a fixed neutral setting that explores

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<sup>41</sup> C. Inventory 2.

discretely the phenomenon by operation of a subject, they are in themselves boundary making practices with no intrinsic boundaries as to where they start or end, but an open-ended practice. They are performing an on-going reconfiguration time and space.

*Apparatuses* are not mere observing instruments but boundary drawing practices (ibid., p. 206). *Apparatuses* are material-discursive practices and also material-discursive phenomena, materializing in *intra-action*<sup>42</sup> with other material-discursive apparatuses. Apparatuses are not pre-existing fixed entities. They are themselves constituted through practices that are perpetually open to rearrangements, rearticulation and reworking (ibid., p. 203). In sum, apparatuses enact the *agential cut* that differentiates, the subject-object, the apparatuses with other apparatuses. In this sense apparatuses are both as invented and inventing, but also the set of conditions of possibilities (ibid., p. 143) of invention.

### 4.3. Digital-physical (dis)continuum as polarized membrane

Simondon is the precursor of philosophies of emergence. He conceives of the physical and the living as different types of the same process of polarization (Barthélémy, 2012, p. 222). The process of polarization for Simondon occurs within a polarizing cellular membrane. Affectivity produces in the membrane a polarization where difference occurs between the physical and the living and is marked by the membrane. (ibid.). The limit that is in progress is what separates *the past from the future*, the interior from the exterior, dissimilates entities. The

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<sup>42</sup> C. Inventory 1.

membrane is not the past of the polarization but contemporaneous with it (ibid.). At the same time that differentiation is produced, the production is differentiated, and the difference is produced and producing. For Simondon, membranes are catalytic of the encounter and differentiating into singularities in the encounter. For Simondon, becoming is not produced between terms that pre-exist the operation, but transductive relations, meaning that it produces the terms in the course of its process. (Sauvagnargues, 2012, p.59)

The membrane is defined by Simondon with two main properties that are both to do with spatiotemporal differentiation: a selective porosity, which allows only certain elements to pass, and which animates its surface by providing it with a functional property. The second property is that this membrane is polar, allowing certain individuals to become and not others. The membrane does not just constitute interiority (ibid., p. 66); it creates it, as well as the exteriority. This is why the membrane should not be understood as an inert limit, but as constituting according to the affection and interests that polarize it. The membrane integrates what is favourable to it, which become constitutive parts, and distinguishes what is unfavourable, which is avoided and rejected, remaining un-constituted (ibid., p. 67). Interiority and exteriority must not be considered as definitive, but entirely relative; what is interior is the exterior of the other and so on.

The polarized membrane, or pellicle, catalyses action and intervenes in the reality to come, dividing time into past and future. That is why individuation for Simondon has been referred to as reticular, as it happens in between the polarizing membrane.

For Simondon the individual is not just the result of the differentiation with the *milieu*, but is also the *milieu* for differentiation, and this is because the membrane is one side interior and on the other exterior, *milieu* and individual. For Simondon, the unity of the individual does not exist; it exists only in an on-going process of differentiation. The catalytic membrane is the differentiation of interior and exterior and it also marks the difference between memory and time, space, place, past and future. It completes and in-completes, at the same time. The living lives at the limits, on the borders, and because of the border.

One can translate the role and particularities of membranes of the crystallization process into the socio-technical configuration and will resonate with the concept of Barad's *discursive-apparatus*, the polarities in the intentionality embedded in the concepts, that are going delimit what is becoming and what is not.

What resonated from reading Simondon and Barad diffractively is that this digital-physical *(dis)continuum* is a dynamic thick *membrane* that differentiates what is physical from what is digital. More than this, it differentiates one and others. It differentiates time into memory and events to come, and in short is the condition for possibilities just decided by the affection or interest from which the polarity of the boundary-membrane becomes.

I am considering wearables in terms of both *apparatus* and *membrane* in *(dis)continuum*; discursive and programmatic, inventing and differentiating, material and organic, human and nonhuman, phenomenon and what constitutes it.

This machine is not a device assembled out of discreet gear. It would not fit neatly into a Euclidean geometrical framework. It is a topological

animal that mutates through an open-ended dynamics of intra-activity. Questions of connectivity, boundary formation, and exclusion (topological concerns) must supplement and inform concerns about positionality and location (too often figured in purely geometrical terms). (Barad, 2007 p. 240)

I use the specificities of wearables to comprehend this division and encounters that the *apparatus*, as practices that enact differences, in a role similar to the one *polarizing membranes* has.

## 4.4 Divisions

### **Choreographies of digital data, people and stuff**

Digital data, is referred to in phrases such as ‘owning’ data, ‘selling’ it, ‘sharing’ it, ‘big data’, ‘data base’, ‘data archive’, ‘open data’, ‘free data’, ‘data generation’, ‘data collection’. But data is meaningful to the degree that one is able to understand it. Crafting the digital-physical, is a discursive-material practice polarized; neither neutral, nor straightforward. It involves analysis, curating, decision-making and processes of selection and discharging. Algorithms mix then with biases such as gender, geo-socioeconomic locations, culture, expertise, age, all into a responsive thing, an ambiguous artefact of the *apparatus*, far from being discreet.

Technologists, designers and programmers’ subjectivities *entangle* with their *apparatuses*, irremediably affect processes of rendering data into the *information*. From that data ocean, as the Simondonian *milieu*, what datum is relevant or meaningful? in combination with what other? relevant to whom? for what purpose? what are the political agendas? economic interests? what are the cultural consequences of processing this or the other information? The digital-

physical things that stick to our bodies are in fact the material iceberg of a much bigger system of *in-material* pipes; and *assemblage* of semantics, infrastructure, government, market and supply chain of socio-material resources.

### **What data say about you and to whom?**

Let me put this into an example about health and fitness mobile apps and wearable techs for self-monitoring. These use interconnected sensors to collect, for instance, how many steps were walked a day, calorie intake, heartbeats, hours of sleep or time under sunlight of an individual. Data is digested and information processed into graphics, visuals or numbers to indicate how healthy the individual is and if they would need to reduce eating calorie rich food, or perhaps would need to exercise more.

These devices, while collecting data from the individual, generate information based on algorithms put together based on versions of an “average” equation. Algorithms do not respond to particularities of each body, eating habits, race, culture, age, gender, health history or personal extenuating circumstances. Code is just another mode of representation that matters, code is the language of *dps*, code is far from being neutral or passive (Barad, 2003). The decision of what counts as ‘average’ determines not just the data one body generates, but also what healthy is and its corresponding behaviours, body politics and narratives of self-others; “I am fat”, “I am sick”, “I am lazy”. In fact, one will be just fatter than “average”, sicker than “average” and lazier than “average”. In consequence epistemologies of “have” and “not-have” and inclusion-exclusion are performed and materialized.



I would like to keep on playing with the same idea. What is the future of data collected by the device? One could speculate it may be used by (sold to) health insurance companies – a plausible vision if one follows the tendency that car insurances have already taken – with the hypothetical theory that algorithms have been programmed in first place by private market interests, for example, to sell medical insurance or to calculate the price of one's policy. Maybe one's future job is at risk because of its data trail. Maybe it's the employer who would like to verify with one's device for personal habits that the wearable will be happy to show. Speculations apart, habits, locations and tastes are *in-formation*, sharable and sellable. Is one's data working for it or against?

Health and fitness wearables and mobile apps are working as the public interface of our privacy, a *polarized membrane* animating their surface to provide functionality just in what is considered favourable; calorie intake, for example. Health and fitness wearables are working as the *material-discursive apparatus* by lengthening our corporeal functions beyond our skins and enlarging oneself, opening it up to external agencies; health insurance, employers, market and even governments. More than a fancy super power or an extension of the body, it is an extension of the agencies of power structures into our skins. It is bodies becoming with data in particular ways. Choreographies of emergence of people, data and stuff. I am particularly interested in borrowing concepts from Media and Culture Studies and Science and Technologies Studies to approach this quagmire.

## 4. 5. Connections

Open data<sup>43</sup> appears to be *about* everyone, but not *for* everyone. Open data is *information* available to anyone but with a condition. The *apparatus* of open data is limited to ones with access, and is partly producing data and partly the difference between who can and cannot access it. In other words, *apparatus*, like *membranes*, creates open data by creating not just the objects but also the subjects.

Demographically, users are overwhelmingly male and generally spread between micro-enterprise and SME business in the private sector, local and national public sector institutions and academic institutions (Davies, 2010), with a very limited representation of voluntary sector workers, almost non representation from civil groups, community organizations or vulnerable communities.

Scholars (Warschauer, 2004; Gurstein, 2011; Nemer, 2015; Busch, 2011) have proposed to understand the digital divide beyond the problem of “have” and “have-not”. Physical access to digital in-formation overemphasizes political-technological solutions based on charitable donations of laptops, labs or programs like one laptop per child (OLPC) (Warschauer, 2004). Solely providing software and hardware cannot be a sustainable solution to the problem of polarization and construction of subjects. Adequate attention should be paid to the human and social systems, (Warschauer, 2004), for differentiation to be inclusive.

Gurstein (2011) postulates the term ‘effective use’ to approach the open data divide beyond socio economical access and to address expertise and cultural

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<sup>43</sup> Data.gov.org (2015), Cabinet Office (2015)

empowerment of the 'digital vulnerable', one that would ensure opportunities and resources for translating data into useful outcomes. This is co-constituting *apparatus* and its subjects-objects. Nemer (2015) posits 'appropriation of technology' as an escape from the inclusive ideology, which equates being included with being a consumer. The author bases his arguments on action research in Brazil, and advances the thesis that when one becomes a technology consumer one signs an agreement with an epistemological system that the artefact hides; methods of data collection, methods of distribution of your data and systems of material production of technology, most of them, according to Nemer responsible for ecological havoc and social injustice. Appropriation of technology seeks perspectives and policies to create opportunities for in-forming communities able to participate, question, produce, decide, change, and become an integral part of social dynamics in all instances.

Digital emancipation was proposed as a conceptual horizon for policy-making related to local development in Brazil (Schwartz, 2008). These emancipatory perspectives seek to change the focus of policies and actions, emphasizing the production of digital content combined with the digital and traditional cultures, overcoming barriers in communities, and encouraging them to be autonomous. The individual could become not just a user or consumer but generator of its own identity through data, and that will translate into empowerment for individual and collective wellbeing, in Simondon's words, *individuation* and *transindividuation*.

There are already many initiatives with the potential of digital-physical empowerment and open data awareness, such as making and hackers spaces,

open source software and hardware, digital commons, digital-physical community workshops and actions for technology engagement that respond to an ethos of objection, participation and inclusion. The membrane is thick and foldable, in between its creases and within it are a generative potential of possibilities and responses.

### **Sites for contestation: a call for action**

Data driven narratives of democratization bank on an idea about materialization and objectification of data, that it enhances one's experience, aids one's memory, and makes one knows one's own body and environment better or deeper. But such discourses are based on the confusion of data with reality, and do not account for data as representations of certain realities and not others. Such confusion does not account for generative agencies of the apparatus and so data are accounted for as real pieces of reality, pre-existing, hanging from the sky in a transparent cloud, and neutral practices of collection of the datum are like a piece of fruit, which do not touch the fruit itself. Accounting for data through the frameworks of *apparatus's agencies* and *polarities of the membranes*, one is aware of a much more entangled marmalade of distributed constitutive agencies.

Considering a *digital-physical as dynamic foldable (dis)continuum* means that the instability of poles or sites of the continuum are sites for contestation, the *apparatuses* are also *in-formation* and sensible to reworkings that can make the difference not just for one but for others as well. *Digital-physical dynamic foldable (dis)continuum* is a malleable platform for enquiry, from which an argument emerge for community – and individual – empowerment. Acknowledging the complexity of the entanglements is a call for thinking *in*

methods for action to bridge gaps, and to imagine creative opportunities from the struggles.

*Digital public space(s)* in the making mean marriages of disciplines, thinking in innovative methodologies, creative processes, and transforming *apparatus* practices to produce interactions of open data more relevant, making numbers *matter*, especially for digital vulnerable communities or those that have not been targeted by market developers. How to enact an encounter rather than a cut, how to go from big data to personal, individual, numbers that matter?

More specifically, in terms of design, how to think *in* methods to connect and not to divide. I am presenting my experience collaborating in a Creative Exchange project called 'Numbers that Matter', which explores reworking of *apparatuses*, by experimenting and combining creative methods that allow to identify issues, needs and challenges of communities at thinking themselves part of *digital public space(s)*.

## 4.7. Numbers that Matter

### **Project context**

'Numbers That Matter' emerged at the one of Creative Exchange Labs 'Making the Digital Physical', facilitated by Prof. Paul Coulton in December 2012. The original idea was to make a 'death watch' that counts its user's years, days and minutes of life left. However the idea quickly evolved in the direction of collective wellbeing wearable, fed by Open Data. In this venture 'Numbers That Matter' joined together designers, artists, cultural researchers and technologists from Lancaster University, Dundee University, FutureEverything and Manchester Digital Laboratory, Dave Mee and Hwa Yung Jung, from Tandot in

the role of “geeky gurus”, and, more minor roles, Peter Sutton and Lloyd Henning from FoxDog Studios and Bob Clough from Hackspace Manchester.

In opposition to market minded projects, ‘Numbers that Matter’ was firmly rooted outside the corporate world. The project sets up to explore intersections of Open Data, wearables and citizen wellbeing. ‘Numbers that Matter’ was not aiming to design a product but rather aimed for innovation at a methodological level, designing a creative research process that empowers participation, inclusion and conversations between disciplines and fields of technological innovation; to allow for encounters.

**Questions that pointed the directions of the research were:**

*1) Open data awareness:*

How can we craft awareness of big Open Data? And intimate personal data generation within member of communities that are not usually “in touch” with data?

*2) Wearable for digital vulnerable communities:*

How to think about wearables beyond Google glasses? Beyond its dominant demographic (white, young, with socio-economic access and digitally comfortable)? How will look and feel a wearable tech design centred in communities that are not necessarily the market’s favourite?



*Figure 32 From numbers that matter to the market targeted individual to numbers that matter for all.*

### *3) Wellbeing:*

How to think about wellbeing beyond individual self-reflection, and more in collective and civic minded terms? How to enquire about people's wellbeing without imposing a "researcher's narrative"? What sort of device would boost collective wellbeing?

#### **Preliminary Research:**

Being a Knowledge Exchange project, scoping the project and arriving to a common language were important stages. Being a multidisciplinary team, interchanging understandings and experiences and arriving to agreement on main project interests and strategies was crucial. In finding a rhythm that encompasses the academic partners with the non-academic partners, the key was to build a flexible research plan, prepare to acknowledge that opportunities may arise and we had to be ready to change plans and take them.

### Emerging Themes:

To address the research questions we started by crafting an adaptable structure for the investigation with three main streams:

#### *1) People:*

The project aimed to address communities that have a say in urban life, communities of people that would have a sense of how other people feel. The team wanted to talk to them about wellbeing, digital-physical technologies and open data.

#### *2) Hackathon:*

The project aimed to connect these communities with hackers and makers, to design together in a hackathon-community event.

#### *3) Field trial:*

As part of the empowerment initiative, the team proposed to devise forms of support to ideas emerging from the project.

#### *4) Activity book:*

The project aimed to open ways for future community projects interested on working with open data and people, and set up to design an open source tool that facilitates and accompanies processes.

## **Thinking *in* methods for numbers that matter**

### **1. In-situ rapid ethnographic**

With the idea of gathering insights on what matters to communities and individuals, the team identified few communities that somehow exercise roles of “wellbeing watchers” (deliberately or not). “Community nodes” were identified; people who we thought would be privy to confidences and conversation about



issues in their neighbourhoods, who would have a sense of civic wellbeing or “ill-being”. The brainstorm included homeless people, nuns, schoolchildren, neighbourhood watchers, hairdressers and taxi drivers. Resources and accessibility decided for us (some of us would have rather worked with nuns) on three focus groups: hairdressers, taxi drivers and neighbourhood watchers.

The team posited that rather than extract people from their natural environments or workplace it was a better idea to contextualize conversations. Inspired by mobile methods, the team visited the communities and in effect shadowed them, gleaning insights from conversation from the side-lines. This was not so simple; it proved a rather complex mission.

#### Hairdressers:

Phoning up places and trying to preface booking an appointment with the phrase “Hi, I’m from ‘Numbers that Matter’ and I’d like to ask you a few research questions” is not a good way to gain access communities. Cycling up and doing similar in person has very similar results, with more of a risk of them calling the police. We underestimated the time and dead-ends this process would take but eventually secured a number of the relevant groups.

Naturally the best way to have a conversation with a hairdresser is to get your hair cut, so the team did and interviewed apprentices with head tipped back as they shampooed and rinsed. Project partners, all well groomed and pretty, nails done and with the freshened up face after a few facials accomplished the building of a small collection of semi-structured interviews about their neighbourhood, themselves, their spare time, their favourite uses of technologies.

We identified that one of the risks of enquiring about wellbeing is that very easily the conversation could fall into clichéd answers, complaints, or mainstream ideas of wellbeing rather than the genuine individual and unique experience. In order to avoid filling up useless questionnaires we opted for the lived experienced conversations. These we had to memorize as having our head massaged while we interrogated offered no chance to refer to notes.

#### Taxi drivers:

With the same shadowing strategy and contextualized conversation, the team took taxis to our research destinations in Greater Manchester, from train stations to hairdressers and to neighbourhood watchers. The team interviewed cabbies, with the same open question conversational style.

#### *NEPHRA Good Neighbours: Residents Association*

I was part of the team that visit community centre, NEPHRA Good Neighbours of New Boston, Greater Manchester. We shared lunch and after the food a workshop type activity was run. The majority of participants were elderly people with hearing difficulties, so the team adapted the conversation with care for the needs, to discuss routines, what could improve those routines, favourite things, where in the city people felt most content, ways of sharing information with local authority.

#### **Insights from the encounters**

The team could map general aspects about these 'community nodes'. For example, hairdressers tend to retire from the industry by the age of forty, suffering from poor posture, tendonitis and joint issues. Favourite app was

Pinterest but apps in general are problematic because their phones are out of reach when hands are busy and most of the time exposed to water and chemicals.

Some of the elderly taxi drivers struggle to use their 'tom tom' devices while driving. In the community of neighbourhood watchers, many are apprehensive about narrow or broken pavements and battling to fit wheelchairs and walking aids. Others told us about planning walks very limited to the perimeters of Wetherspoons, as it is the only place with accessible toilets and source of drinking water.

For generalities the variety of conversations was useful. However, the research team found many obstacles at putting their findings together, they were conflicting, they were all different, they drew contradictory pictures and overlapping maps. The most inspiring findings were in the singularities of the stories, in the individual experiences. It was hard to develop tags and codes to classify them; how to cut out a bit, and tick a box. What was important about those encounters was so not much the recording of the conversation but the material setting, what was not said, the atmosphere, the variety of food that neighbours brought to share with the only reason of sharing, tired legs of the hairdresser without a complaint. If there were a clear finding, it was a call to consider empathy.

The challenge presented was how to communicate these encountered stories in order to enable and foster creativity, and affect empathy in technologists, hackers and makers that respond to the hackathon call. How to hold the fine, the *in-material*, line that was connecting us all?

## **2. Personas and Scenarios:**

The account was necessarily partial; it parted from the intimate, the personal and the lived story. With these fundamentals in mind, the research team designed 'personas' and 'scenario' as tools to communicate the ethnographic findings.

### Personas

The 'persona' and 'scenario' tools were created, as a system that communicates, transmits and evaluates lived contexts with all the complexities encountered. We chose a couple of the stories per community, and used comics to represent them, trying to include the experience of the encounter through drawing and plain language.

### Scenarios

In the 'scenario' we make our 'personas' meet in an imaginary context. The 'scenario' was representing a certain socio-technical setting presenting conditions in which the 'personas' would be in tension of conflicting needs or aspirations. By playing 'personas' in 'scenarios' the participants of the hackathon, realized, though and could articulate the situations, uses – and misuses, encounters and divisions of the technological settings. By assembling the 'personas' in the 'scenarios', contradiction of interests, opportunities and connections were sparked. It was a very simple tool, but it worked to open discussions about the ethnographic findings and to illuminate design processes and boost empathy.

### 3. Hackathon

Although we were identifying as a 'hackathon', completed with prizes and pizza, we wanted to distance ourselves from the 'programmer' hackathon approach, we could certainly not have a hackathon with a focus on designing for wellbeing and civic awareness that expected our participants to work 48hours straight and survive mainly on Red bull. It was important to us that we treated our community of hackers, geeks, makers, designers and other interested parties with as much respect as we had our community groups. In the hackathon the tools, 'personas' and 'scenarios' were opening rich conversations, participants had the opportunity to introduce themselves and their interests. Special guests did short presentation as 'Lightning talks', including some special guests from the 'communities nodes', presented as inspirations during the three days of the hackathon, teaming up and working together was encourage. The creative, interdisciplinary and collaborative ethos of the project infected a making space over the weekend of the hackathon, where participants and researchers had the chance to meet and encounter in the non-typical competitive hackathon way.

#### Emerging project ideas.

By the end of an intense couple of days of creatively exchanging knowledge, experimenting, prototyping, testing, playing with ideas and things, with numbers that matter, participants presented the following hacks:

- Path Patterns – (Mar Dixon, Catherine Jones)
- Pure Sentiment – (Ben Webb)
- Happy Hands – (Michelle Hua, Ying Tan, Eujin)

- Super Forage Now – (Sam Jones, Neil Winterburn, Tim Brunnsden)
- Data Tumours for a Better Society – (Ben Dalton, Bettina Nissen)

‘Path Patterns’ was a hack for a device made for shopping trollies and wheelchairs that would show the best route for a desirable destination as well as the proximities of clean toilets and water source, for example. ‘Data Tumours’ took a more artistic approach, where people could wear inflatable tumours that show as an extension of the body, some subjectivities and feeling, for example, how tired or sad people were in a particular moment, the idea was to arise empathy and understanding without the need to express it with language. ‘Super Forage’ was a wearable tool belt, which would direct and connect people or communities interested in foraging. ‘Happy Hands’ was a hack of smart gloves for elderly people, and people that either suffer from cold hands or work outdoors. The gloves would keep their hands warm as well as have a connecting function, such as, the proximity of a friend, or send some health information to the GP, or inform about weather conditions. The latter hack was the winner of the event. This [video](#) document made a fair resume of the atmosphere and gains of the collaborative hackathon weekend.



Figure 33 Tweet from the hackthon

## Project outcomes

### Field trial

'Numbers that Matter' and The Creative Exchange supported the dissemination, rights to showcase and follow up research to the winner hack. The Field Trial Winner was 'Happy Gloves' by Michelle Hua. Happy hands in the field trial evolved into made with glove

'Numbers That Matter' arose out of a desire to foster ownership, empowerment and understandings of how open data potentially affect individuals and communities. The ethos was rooted in hacker spaces and the open movement,

whether open data or open source. 'Numbers that Matter's' winning hack had the opportunity to be improved, refined, distributed, prototyped and able to get 'out there' and be used by individuals in their communities. 'Numbers that Matter' aimed to support the winning hack. Creating an IP document and specific arrangements became the next challenge, testing practitioners and designers of the research team in their roles within a project the objective of which was to design a collaborative process rather than design a thing, designing the apparatus or the membrane rather than a definite tool.

'Made with Glove' toured in Design and Technology conferences, like FutureEverything, and PrimeConf: Best of British and The Creative Exchange is supporting Michelle Hua for the next steps as her journey as entrepreneur, and is taking a more fashion-design approach (<http://madewithglove.co.uk>)

#### Activity Book: working with data and people

'Numbers that Matter' created a free downloadable activity book as a tool that may serve future communities, researchers, hackers, designers, students and more to think about people and data together. It focuses on playful activities and knowledge exchange tools that would serve communities exploring how open data affect their wellbeing and their expectations of wellbeing. The book includes a tool on how to build their own 'personas' and 'scenarios' tool.

One of the lessons learned from the project was that planning to work with people and data is a challenging task. In the process we encountered many hurdles and delays, especially at breaching the community: how to approach people? How to initiate conversations? How to think together about needs, expectations, information and perceptions? How to avoid prescriptive questions



and answers? How to get meaningful outcomes? How to create data awareness and to put those data to work for the community? How to represent the ethnographic work? How to communicate findings? How to create encounters rather than division?

This toolkit meant to make the road of communities and researcher a bit less bumpy. The toolkit narrates the 'Numbers That Matter' story as a short tale to inspire others with a relatable experience. Simple and playful activities were designed for people starting a project or idea, or a discussion about wellbeing, wearable techs and Open Data as locations of digital public space.

## Inventory of words that matter n.4

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- *Digital Physical (dis)continuum*

I propose digital-physical as the *material-discursive apparatus* and of *digital public space(s)* (Barad, 2007, p. 203) proposes that to understand the complex nature of the phenomenon in question, in case that occupies us, *dps* phenomenon, it is necessary to understand the nature of the apparatuses and the processes by which they are produced. I propose that *dps* nature of a *polarizing membrane*.

“Because this membrane is selective: it maintains the milieu of interiority [milieu d’intériorité] as a milieu of interiority in relation to the milieu of exteriority [milieu d’extériorité]. You could say that the living being lives at its own limit [à la limite de lui-même], on its limit [sur sa limite]; it’s in relation to this limit that there is a direction toward the inside and a direction toward the outside, in a simple unicellular organism.” (Simondon, 2005, p. 224]

I diffracted Simondon’s ideas of *membranes* with Barad’s ideas of *apparatus*, to find coincidences that allow me to map out *digital-public dynamic foldable (dis)continuum*.

I am interested in *polarizing membranes*, as temporal, foldable, living, thinking boundaries that are interior-exterior, past-future and matter-in-matter, but are generating all dissimilar entities.

The entire content of the internal space is topologically in contact with the content of external space at the limits of the living. Deleuze, 2004, p.

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I am interested in *apparatus* as practices of drawing boundaries and also as a socio-technical phenomenon in itself.

Apparatus are the material conditions of possibility and impossibility of mattering; they enact what matters and what is excluded from mattering. Barad 2007, p. 148

To have the emphasis on practices of constitution, inclusion and exclusion, or what I described in Chapter 4 as divisions and encounter, makes the researcher-practitioner *response-able* (in Barad's sense) to take care (as in Simondonian *affection*) with practices that are not just mediated by *apparatus*, but are about the constitution of *apparatus* in the encounter, and in this is reformulating methods and researcher, research and knowledge in the body-tool (dis)continuum I elaborated in Chapter Two.

- *Thinking in methods about practices of digital-physical*

This capacity for inclusion and exclusion, at the same time that it generates exterior and interior is what Barad called *agential separability* or *agential cut* (ibid., p. 140). It coincides with Simondon's philosophy of *emergence*. This disagreement with the pre-existing reality, shuffle the causality system.

Once the cause-effect relation is troubled, the whole system of methods, researcher and research is disturbed too; the body-tool continuum folds. One cannot study the cause of a determinate effect, or the effect of determinate action, deductively anymore. If phenomena are produced or emerge through the event of the encounter, the encounter is both cause and effect; cause-effect. The role of the *dps* researcher-practitioner has to assume a position that fosters encounters with care and affection.

To think about the *digital-physical* as *apparatus* in Baradian terms, means that the researcher-practitioner is not just working with a medium, for example wearables, but is working within a wider socio-technical setting that is affecting, co-constituting *dps* phenomena, *the medium is* – not just – *the message* but is the *polarizing membrane of socio-techno-logics in-formations*.

*Digital public space(s)* are then practices of drawing boundaries, always. In which case, one must assume the responsibility and the pleasure of deconstructing such boundaries and reconstructing them. In this, potentialities for creative practices are infinite. If ‘Numbers that Matter’ encountered other communities, or even other singularities with same communities, the projects that emerged from its process will be others. There are as many potentialities as combinations of polarities that allow the encounters.

- *Framework of emergence*

Transduction addresses singularity and particularity, the forces of the real in its nuanced specificity, rather than general rules as do deduction and induction. It is a logic; for the emergence of objects, things, processes rather than a mode of generating conclusions. (Grosz, 2012, p. 43)

Looking at *digital public space(s)* manifesting *cause-effect* opens opportunities not just to re-shape and *in-form* the role of the researcher-practitioner, But with it, possibilities of re-shaping and *in-forming* a framework of *emergence*, that allow for evaluation, ideation and communication with parameters that reflex both *polarizing affection* and *response-ability*. Such a framework is also reformulating aims and objectives of investigation, and affecting not just what count as findings but how they are communicated within the context of *dps*

projects and practices. It is not so much about designing a cause or an effect, or the solution to a problem, but designing processes that foster encounters rather than divisions.

Chapter Five.

*Public-private (dis)continuum.*

Emergence of *one-others* and practices of differentiation

## 5. *Public-private (dis)continuum*

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### Emergence of *one-others* and practices of differentiation

The BBC's original proposition of Digital Public Space (Chapter One) makes special emphasis in its 'public' quality. However public in this proposal gave us a sense of scale, it is large, encompassing 'public' understood as opposite of 'private' and 'public' as 'tax payer', 'public funds', open archive, as town library, as common good, as Radio 2, as Salford Media City Square. 'Public' as 'everyone' – it should be noticed that 'everyone' refers to everybody else, but not to 'oneself', as in 'everyone else but me'.

Conscious that the 'public' constitutes a whole field of various sciences and disciplines; sociology, psychology, political sciences and marketing, I am concerned with *public-private* as a set of practices that are entangled with ideas and matters to do with property, value, control, identity, access, comfort, permanence, originality, ownership, cultural constructions of the 'one' and 'others', a configuration of doings that mark their distance, material construction of boundaries in between, and forces within.

Public as a concept is constantly being re-thought and discussed.<sup>44</sup> Public has been challenged by digital technologies<sup>45</sup> – designed to spy – and by the Internet – owned by all and by "anyone" – from their mere conception. The public

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<sup>44</sup> Ideas of public sphere (Habermas, 1989; Calhoun, 1993; Garnham, 1995; Fraser, 1990) contrasted with ideas of social construction of public space (Lefebvre, 1991; Castells, 1983; Mitchell, 2003) and politics of public space (Elden, 2007; Harvey, 2006). for example different from publics or being in public (Dewey & Rogers 2012; Hannay 2005).

<sup>45</sup> For insights on public space in relation with digital space please C. Dodge & Kitchin (2001), Kitchin & Dodge (2011), Crang (2000) and Graham (1998).

experience that used to start from the threshold of the home, is not just transforming, but changing value. One is being progressively more anonymous in the city and more public in digital sites, even if one is physically in the seclusion of one's privacy. Details of lives, feelings or episodes of a very private nature about strangers are (either consciously or by accident) more visible to the public eye. This social distribution of privacy that used to be very ephemeral, like witnessing a marital argument in the public street, in the digital context, is condemned to be online forever, never able to be deleted or erased totally from the public glare. Permanence, in this sense, is also *entangled* with the issues of public and private.

But the issue of public is in challenge at a physical level too. The square, the park or the boulevard, are places that are increasingly losing their 'public' quality in order to be privatised.<sup>46</sup> Privatisation implies ownership and control which confronts the idea of public with the problem of access;<sup>47</sup> public increasingly belongs to a shopping mall or city council, meaning a different experience and expectations of behaviours and practices programmed by explicit codes, laws, or implicit subjective assumptions. These are places that get "closed" at certain times, that are being watched by security cameras, and in which certain practices are not allowed; practices such as sleeping or drinking on benches, cycling or skateboarding, protests, public meetings, political discourses, art happenings and performances. Are these places still public?

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<sup>46</sup> For privatization and politics of public space c. Kohn (2004), Low & Smith (Eds.) (2013); Savas & Savas, (2000) and Nissen (2008).

<sup>47</sup> For discussions on access and exclusion of public spaces C. Kitchin (1998); Page & Thomas (1994); Mitchell (1995); Iveson (2003) and Kilian (1997).



The image that 'public' paints as the space of action of a homogeneous grouping frames many things – and people – out. Public as community does not count for the difference, does not consider that what someone can share in public is different for others. The privilege of public is overlooked and public as community does not count for the differences *within* the community, or in between communities, or for communities in conflict or for community-less individuals.

Public gets confused with 'social', 'communal', 'audience', 'private', 'owned', 'shared' and 'personal': it is not very useful for *dps*. The governmental concept of 'public', as in, public because it is owned by the state and funded by public resources, is also insufficient. The Public capitalized, public, as groupings of people, the Public Sphere, public as community, socially constructing a utopian space, are all partial representations. What used to be public is not anymore. Public defined in contrast with private, conflicts when the value of privacy is being exchanged for other practices such as, sharing, distribution, visibility, connectivity and comfort. Definitions and delimitations of public are in tension, because *public-private* is a tension in itself, a set of discursive-material practices in constant negotiation, in creative, ethical, political struggles and *entangled* significances.

I am concerned with a diffracting/ed *dps* that acknowledges generative differences. It seems necessary to reconsider the concept of the 'private' and to re-define the 'public' in order to create terms that are not the poles of a scale but that account for cultural practices affected by and changing value. I am opening questions about what is desirable about public and private and why.

In this chapter I diffractively weave Baradian ontology and Simondonian axiology to make sense of generative relations of *public-private* as *dynamic foldable (dis)continuum*. I contribute to my *framework of emergence* by thinking *in* methods and creative possibilities of these tensions; sharing, trans-passing, re-appropriating, remixing, in creative and ingenious ways that negotiate the private-public tension. The chapter ends by referring to a 'Chattr', a collaborative project that explored the *public-private* practices of negotiation in an artistic installation.

## 5.1. Ontogenesis and ontological entanglements of one-others

### **Becoming is not an individual affair**

To be one is always to become with many. Haraway, 2008, p. 3

This section refers to the ontological 'being' not as a quality of existence, not as an entity in the universe, but as a process of 'becoming', a collective project, an unfinished business, becoming in plural, becoming *with* the universe, not after, not in, not above. Becoming as generative, as co-constituting, becoming always as an on-going phenomena that includes others, ideas and things and that is the basis of my *framework of emergence*.

In Barad's *agential realism* (2007), phenomena are constitutive of reality. Phenomena are considered in the inseparability of culture-nature, human-nonhuman, and one-others. Phenomena are considered as the *intra-acting* of forces, ideas and matters in processes of co-constitution of one-others.

In opposition to the split between culture and nature, Barad (1998) argues that 'subjects' and 'objects' do not pre-exist as such, but are constituted through and

within particular practices (p. 106). Within dissolved dichotomies, 'one' is no longer contained and autonomous but the accumulation of relations and practices, from which subject-objects, one-other, *emerge within the differences*.

This inseparability does not conceive things, subjects and ideas in nature but as *intra-active* – with *agencies* – *phenomena*, not the action in between but the action *within* subject-subjects (2007, p.206). Phenomena of existence, in Barad's words, 'are not an individual affair'. Individuals emerge through and as part of their entangled intra-relating (p. ix). In this sense, reality is not fixed in essence, but an on-going dynamic of intra-activity, and so the identity of 'one' and 'others' is also in on-going co-constitution through differentiation practices.

Barad (2012) disagrees with ideas of contained and fixed identities and proposes a diffractive study of identity and quantum theories in contrast with classical physics. Barad explains that the latter understands material existence as particles in the void. From classical physics to quantum theory there is a radical ontological change in understanding the void no longer as neutral or passive. Barad states, 'it is a living, breathing indeterminacy of non/being. The vacuum is a jubilant exploration of virtuality' (2012, p. 4). She proceeds to explain the void as formed by virtual particles, mere possibilities of being and time, the potentialities of existence, particles that may be or not – Schrödinger's cat, both alive and dead – what she calls 'ghostly non/existences that teeter on the edge of the infinitely fine blade between being and nonbeing' (ibid.).

By 'ghostly non/existences', Barad is referring to quantum ideas of neutrinos existing in combination of multiple states of being, time and space. These 'ghostly non/existences', according to the principle of indeterminacy, remain

indeterminate until their encounter with 'others', concepts and apparatuses. The outcome of these virtual practices becomes in the encounter, its essence is an indeterminate possibility. All the possibilities combined conform the void always ready to become. Each of these virtual particles change essence, position and time, queering identities by diluting the mere concept of essence. It is by the materialities, concepts and practices of the experiment – the *apparatus* – that the particles stabilise and sediment into a measurable existence. Before the experiment is performed – before Schrödinger's steel chamber is opened – *one-others* are all possible potential connections (Barad 2012).

In this sense, *one-other* identity is on-going constitution through encounters with others who themselves constitute exterior (from within). This exterior from which the interior emerges is the conglomerate of infinite possibilities to define and redefine becoming, become in relation to, and because of, others – *all* the others and virtual possibilities of others. *One*, then, has the potential to become in relation to all possibilities of others:

[T]ouching the other is touching all others, including the "self," and touching the "self" entails touching the strangers within. Even the smallest bits of matter are an unfathomable multitude. Each "individual" always already includes all possible intra-actions with "itself" through all the virtual others, including those that are noncontemporaneous with "itself. (Barad, 2012 p. 7)

The 'agential separability' presented by Barad gives an alternative to the unsatisfactory binary oppositions, that presupposes that there will always be something on top, or behind, or unconditional, that precedes one-others. For Barad this is cause and effect. Importantly, "individuals" for Barad, are infinitely

indebted to all others, where *indebtedness* is about not a debt that follows or results from a transaction but, rather, a debt that is the condition of possibility of giving/receiving. (Barad, 1998, p. 7).

For Barad, practices of stabilizing one, as geometrically separate from others, are practices of 'apartheid' that establish 'a definite line that separates self in one side and the others as *not-I*, in the other' (2014, p.169). Such geometric constructions that divide interior from exterior, always serve the workings of power (2014, p. 170). Through the *framework of emergence*, I am proposing to make visible the discreet entangled practices of stabilizing one, that are always practices of *othering*.

Inspired by Baradian ideas of entangled individual and *indebtedness*, and Simondon's processes of individuation, I make sense of 'public' as one-others becoming through discursive-material practices of differences.

### **The ontogenesis of individuation**

Simondon's interest is in *ontogenesis*, that is how something comes to be, rather than ontology, that deals with what is (Mackenzie, 2002, p. 19). Simondon is interested in the *emergency of emergence*. His project (1992) on the process of individuation rejects fixed entities and identities, coinciding with Barad on permeable membranes or boundaries that are both interior-exterior. At the core of Simondon's argument is the idea that the "individual" is never given in advance; it must be produced, it must coagulate, in the course of an on-going process. This also means that individual is never final; it is always incomplete and it will always need to keep individuating. This resonates with Barad's idea of 'indebtedness'.

Within the individual, even when maturing, and because the individual is not a complete and closed entity, the individual seeks individualization, as individual or as transindividual; whether a single entity or a forming of groups. Simondon studies the formation of small social groups within the social in the same way that he studies the emergence of the individual, understanding as interior, the practices and features of members within the group and as exterior, how the rest of society perceives the group. Individuation and transindividuation, for Simondon, is a continuous process; it is always a process of the in-between.

Simondonian *ontogenesis* also accounts for the generative difference in a similar fashion as Barad does with diffraction. Shavero summarises Simondon's theory of individuation:

The individual, as (continually) produced in a process of individuation, is never an isolated Self. It is always coupled or coordinated with a milieu; the individual can only be understood together with its milieu, and cannot subsist as a unity without it. Individuation understand sameness through difference — rather than the reverse — by coupling the living individual with its *milieu*, and understanding what is unique and enclosed about the individual precisely in terms of its relation to the milieu which it is not. (2006)

For Simondon the individual comes to be with its *milieu*, via the same processes by which the *milieu* comes to be, not as a dissociated identity but as a subset or phase of the process of individuation of all things animated and non-animated, natural and technological. According to Simondon, each subset loses in the encounter with the next and simultaneously gain the next's, explaining the eternal sense of incompleteness. This eternal sense of incompleteness resonates with Barad's idea of *indebtedness*.

This lack of completeness fuels a constant search for association with others that produces a catalytic encounter. It is through encounters that individuals and others emerge. 'One' will be always more than itself, 'one' is at once, *pre-individual, individuating and individuated* (Grosz, 2013, p.38). In the context of my discussion, I understand becoming not as self-contained but as self-in-public, beings becoming something always incomplete and always containing a residue from its *milieu*, always in process.

Inspired by the resonances of both Simondon and Barad, the *framework of emergence* I propose is based on the principle of generative differentiation and discontinuity within the encounter. In these notions, the collective is in tension with the individual's internal programmatic incompleteness.

This Simondonian sense of incompleteness is what Stiegler called *being-at-fault* (1994, p. 258) or the originary de-fault origin (p. 259). The programmatic quality of this fault, that it is both in the collective and the individual, that creative tension, that moves the individual to seek constant encounters, is what Stiegler refers to as *publicity* or being-with-one-and-others.

I am going to use Stiegler's idea of *publicity* as a programmatic force, as I consider it more useful in trying to understand the 'public' in diffracted *dps*. To understand further the idea of *publicity* as creative and generative tension, I now *(re)turn* to Stiegler system of tertiary or prosthetic memories.

### **Incompleteness by de-fault.**

The key element, the fuel, of the whole *tertiary prosthetic memories* project of Stiegler in his *Time and Technics* trilogy, is the programmatic sense of incompleteness or according to Stiegler, de-fault origin and origin by de-fault. This

argument is developed in *The Fault of Epimetheus* (1994). At the end of its study of palaeo-anthropology in Rousseau and Leroi-Gourhan, Stiegler argues that the origin is neither external nor internal, neither transcendental nor unconditional. Stiegler bases his ideas on Simondonian theories of *ontogenesis*, and proposes a theory of non-origin, the transductive aporia – all over again – (see Chapter 3).

Origin by de-fault is a state of doubtfulness from which emerges a creative tension and a simultaneous resolution. This state is due to an atemporal sense of fault or incompleteness. What I am calling ‘atemporal’, in Stiegler’s words is, *without* temporality, *beyond* time, ‘what originates time between birth and death (...) what extends self between “already” and “not yet”’ (1994, p. 7). More than atemporal, for Stiegler the fault is what ‘possibilitizes’ time, and ‘constitutes the originary temporality of existence’, a past before the come back from the future (ibid.).

Stiegler’s subscription to the Heideggerian system of thinking, means that this original, and simultaneously originating, sense of incompleteness or fault is connected with the idea of *dasein*, a concept that unifies one’s sense existence with the existence in the world, being not separated from being-in-the-world.<sup>48</sup> By connecting the de-fault origin to *dasein*, Stiegler resolves the aporetic problem of time a-priori and origin.

Stiegler retakes Simondon’s ideas, “transductively” read with ideas of *dasein* (2009), and proposes *publicity* or ‘being-in-common’ (p .8) that originates both the individual and collective as the resolution of the individual way of dealing with its sense of de-fault. For Stiegler it is this mere individual sense of de-fault

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<sup>20</sup> See 2.2.3 of the entry on Heidegger in the Stanford Encyclopedia of Philosophy, accessible at <http://plato.stanford.edu/entries/heidegger/>



and death (that for Stiegler's constant conversation with Derrida, is not the cessation of existence but the possibility of existence in the difference), that gives the individual a sense of *mine-ness* (as 'my death'). In *dasein* is shared an intrinsic instinct of incompleteness that fuels encounter and externalization, and a sense of mortality that fuels individuality. In short, Stiegler amalgamates Heidegger's *dasein* with Derrida's sense of death and existence, to agree and advance Simondonian understanding of the individual come to be with in time and always in relation with public, or in Stiegler term: *publicity* (1994, p. 273).

By diffracting Barad, Simondon and Stiegler senses of 'one' and 'others' I found an idea of public less partial and inclusive of the individual, all the individuals entangled in their difference. The infinite potential of becoming in the encounter with others by *being in public*, I posit as *publicity*.<sup>49</sup>

### **Publicity**

Stiegler differs with Heidegger that the individual is constitute outside of the public—in its privacy. I am taking this idea of *publicity* further to propose *publicity*. Publicity, as the generative potential of becoming in the encounter with the other, and being in private, or privacy, is going to be the lack *publicity* potential, the stabilization of the self and the enactment of geometrical differences that Barad called practices of "apartheid".

I propose *publicity* as the necessary opposition of the individual and its group, that the dynamic generative constraint that Simondon sees vital in processes of *transindividuation*. Publicity idea is base on Stiegler's all join potential possibilities of being (2009, p.252), just like Barad's idea of the void. *Publicity*, I propose, is the

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<sup>49</sup> I move from Stiegler's "publicity" to propose "*publicity*" instead, as I found the term publicity to be confusing with the common meaning with advertising, media attention and marketing.

generative encounter of *one-others*. The term *publicity* is the key for the whole *framework of emergence*.

*Publicity* is the field that allows for internalisation and externalization of memories. In this system matter and in-matter always embed *publicity*. The idea of *publicity* as fundamental part of techno-logical system of memories, make us think of *publicity* travelling -“moving towards the world”, in Stiegler words (ibid., p. 273).

*Publicity* in the *framework of emergence*, constitutes interior-exterior, *one-other* in public time, it means the specialization of time, and with it of space, that in this system are always public concepts, as it all become in the constitutive tension of *publicity*, a time-with-one-and-others (p. 273).

*Publicity* refers not just to a grouping of people, or a space, or to questions of ownership and control, *publicity* is a term that involves constituting and creative qualities, it is agency, it is flux, traffic, actions, a set of practices, or better; *publicity* is what fuel practices. In contrast, I am going to understand privacy in similar sense to Simondon’s ex-centric dying membrane or as Stiegler’s ‘ideo-textuality’ or ‘idiosyncratic’ or idiotic ‘intimate publiciy’. Privacy as the internalization of the system of programs that *publicity* brings to the relation with being. In this sense being in private is being with an internalised *publicity* is being incomplete and unable to keep on individuation.

## 5.2. Axiology: technical mentality and value constellations

The processes of individuation, for the Simondonian project (1992), are networks of energy distribution. The technical objects are regimens of information, and humans even operating them, using them and inventing them, are part of the regimen of functioning, and existing under *the same* mentality. All objects and subjects shared a process of individuation and completion that meant losses and gains in the encounters.

This chapter's aim is to *cut-apart-together* ontological issues of *publicity* – or becoming-through-public – to axiological issues of *publicity*, this is who owns, who wants to own – or not – who wants to share – or not – and why; the value of owning and the issue of value of *publicity* and privacy.

For this, I am going to *re-turn*<sup>50</sup> to Simondon's (2013) reading his work diffractively with 'From Value Chain to Value Constellation' by Richard Norman and Rafael Ramirez (1998), a book on organisational patterns of business, and with it, in large, economic processes. Norman and Ramirez proposed a model that contest the business metaphor of the assembly line, proposing "a system of value-constellations-multi-partied, interactively dense, dynamic", in great part inspired by, what they refers as, "the technology of the microprocessor" (p. vii). With this, Norman and Ramirez coincide with Simondon that the mentality of technics, the mentality of tools and machines, the programmatic quality that I propose as *publicity* is the same mentality of the reason shared in the materiality

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<sup>50</sup> Re-turning in Barad's sense in not returning as in reflecting on or going back to a past that was, but re-turning as in turning it over and over again – iteratively intra-acting, re-diffracting, diffracting anew, in the making of new temporalities (spacetime-matterings), new diffraction patterns. (2014, p. 168)

and *in-materiality* processes of becoming. One does not program the other, it is the *same* mentality that manifests in reason and in machinery systems, and both human and nonhuman share same mentality or *publicity* through technological systems.

### **'Res extensa' and 'Res cogitans'**

Simondon's system of value project (2013) departs from contesting analogue technical mentality of the machine, the Cartesian idea of continuous linking of elements that Simondon extends not just to the 'res extensa', but also to the 'res cogitans'. This means that analogue machines (always *assembles* of human and nonhuman) work in a linear continuous linked chain system because cognitive schemas (human and nonhuman) also work in this way, one constituting the other, or more precisely the same mentality manifested in both beings and technics, human and nonhuman. Under this principle long chain of reason transports evidences from premises to conclusions, in mathematical inspired method and mentality that allowed for machinery design, science and philosophy to developed under the main assumption, that Simondon nominated the principle of *transference without loss*. (2013, p. 2)

Simondon contests the mentality of continuous chain and sets his axiology inspired by cybernetic systems and biochemical reactions of crystal formation, to understand regimes of existence of beings and technics manifested, not as the *transference without loss* of linearly linked subsets, but as *successive waves* – in this diffractive point Simondon and Barad encounter (in my writing) across *time-space-matter*. The proposal is to challenge the analogue continuous mentality of the chain with two main premises:

1) *The subsets are relatively detachable from the whole of which they are apart.*  
Simondon 2012, p. 3

Continuity is the key principle of the technical chains that Simondon contests, proposing discontinuity instead. Discontinuity involves three factors in creative tension, the discontinuous nature of the elements, but with it, its incompleteness – Stiegler’s *fault* – and its desire to be completed – Stiegler’s *origin by de-fault*. Technical object or element, explained Simondon, requires maintenance and repair, completion and the full illness of it is lost in their processes of completion (ibid.).

2) *[I]f one wants to understand a being completely, one must study it by considering it in its entelechy, and not its inactivity or its static state.* (2012, p.4)

Simondon proposes a system of existence of beings becoming in a regimen of functioning, not in isolation, not static. In these coincidences of Simondon and Barad, I based the *framework of emergence* in response to the need for methods that make sense of differences and interactions in time, in movement, rather than fixed, definitive or isolated – *diffraction* rather than reflection.

### **Constellation of value and the value of *publicity***

I am arguing that the value of owning things and places is shifting within *digital public space(s)*, because the idea of owning responds directly to the mentality of continuous chain of *transference without loss*. I am going to discuss that value has been re-distributed within *mentality shared* or *publicity* with cyber systems and that respond more to the *constellation* concept than to the chain model. I believe that both systems or regimens of existence are impairing; the workings of one do not abolish the other’s, the two systems coexist, or better; chains of value prevails, so in this sense, there is a *constellation* in where some of the subsets are

still chained in a linear continuous, a system both continuous and discontinuous, that I am referring to, with the Baradian term, *(dis)continuous*.

Owning a thing or a space used to mean that one 'owned' it, one can take hold of it, control it, that it sums up to one's assets and that it belongs to one and it could be part of one's legacy, be sold or exchanged. The value of all what it meant to own was determined by connected chain of continuous elements transferring value *without loss*. One's product or service, had to preserve its original qualities and identity. However I believe that within diffracting/ed *dps* value is distributed in dynamic and (dis)continuous systems, which elements could be detachable or re-connected in a non-linear fashion.

The axiological system that Simondon proposes coincides with the idea of *constellation* and rejects the figure of chain. In this dynamic *constellation* of (dis)continuous subsets, the value is in every possible connection or encounter, rather than in the transference *without loss*, the transference means a loss and a gain, a subset that is incomplete by de-fault gains more by linking with many subsets simultaneously rather than to just the one. That is, it will be more worthy to be one-others than just the 'one', *publicity* rather than privacy.

Another way to understand the shift from chain to *constellation* mentality is in terms of market and systems of production. I am going to write up *diffractively* Norman and Ramirez's (1998) system of constellations with Simondon's axiology and Barad's *agential realism* in order to feed the proposal of *framework of emergence* that allows to think *in* methods about *public-private dynamic foldable (dis)continuum of digital public space(s)*

Norman and Ramirez (1998) started by interrogating the notion of 'product' not as an isolated and fixed entity. They used the example of the experience of listening a CD of the French composer Charles-Valentin Alkan in a new CD player as a final product:

“The physical embodiment of assets comprised by knowledge and experience, in themselves the result of myriad activities performed by many people dispersed in time and space...”

[I would say many actors, human and nonhuman, it is within my diffracting reading-writing a very similar idea of *apparatus*].

...some of these activities have provided access to natural resources in increasingly refine forms. Others have produced complex goods and systems. Others have created knowledge of basic technologies and sciences. Yet other activities have combined many of these resources in a systematic way, and created access to them for users. Although the aluminium front panels [of the new CD player] are remaining physical evidence of much of these activities that the user now has access to, transportation, financial services, advisory, installation, management, and other activities that have been equally necessary and indispensable in making the user able to enhance his life by listening to Alkan. It is this useful to consider any 'good' as the physical embodiment of an incredible complex set of activities performed by a large numbers of actor [this time in their own words!]. (p. 25)

[And they continue...]

“Any 'service' follows the same logic” (p.25)

[I would say – inspired by Simondon – 'mentality' rather than 'logic']

Without dissecting a service (say, a visit to the family doctor) in as much detail as the CD player, we can summarize some of the activities which make the service possible. By meeting the doctor, the patient has

access to the accumulated experiential or clinical knowledge of that doctor and, through the doctor's own history and education, to relevant parts of the accumulated knowledge of medical science. Since the consultation cannot be performed without medical objects –the hospital or room in which take place, equipment such as the X-ray machine or stethoscope- in the consultation the patient also has access to all activities embodied in those goods. (p. 26)

[The understanding of cognitive concepts, matter and meaning, entangling in activities that sediment within objects and apparatus is very Baradian!]

Norman and Ramirez sum it up like this:

In sum, a product or a service, anything of value to a 'customer' is created through a collection of activities by different actors made in one way or another to the 'supplier' bringing value to the customer. Since the same logics [or mentality] apply to both product and services, we will henceforward use the term '*offering*' to refer to any output of the value-creation system (the 'producer' or 'supplier') that is an *input* to another (the 'customer') (p.27)

[notice the use of italic and commas that are highlighting their questioning to static identity of the subset of the system in isolation]

I will follow and subscribe to Norman and Ramirez's proposition of *offering* rather than the product, good or property. The term *offerings* responds directly to Simondon's transference *without loss* principle, *offering* implies, *loss* and encountering, but more importantly is not a static 'offer', a fixed end, but an activity. I am considering *offering* activities or better, the accumulation of activities, rather than an inert end of chain. The term *offering* also encapsulates the meaning of 'transference *with loss*' which is produced in the event of originary encountering. I will continue reading diffractively Norman and



Ramirez finding the coincidences that matter in the shift from chain of value to value *constellation*:

In the influential book *Competitive Advantage*, Michael Porter (1985) depicted the relationships between actors in productive systems in terms that were unidirectional and sequential in nature. In Porter's now-famous 'value chain' notion, economic actor A sells (or passes on) the output of his works to actor B, who 'adds' value to it, and sells or passes it on to actor C, who adds value to it, and sells or passes it on to actor D, and so on until it is sold to the end consumer. (p. 29)

[Notice that this description of 'value chain' is directed with the principle of transference *without loss* from each actor to the other, in which actors add value to the product, *without losses*, neither in the 'product' nor in the 'actors'.

Norman and Ramirez, contested the notion of a chain of value, proposing sequential tendency of value system is which each actor gets more value when is connected simultaneously and in direct relation, the value in this sense is the lost of the actor, but is gain of the product as it constitute an 'offering'. Each actor would have multiple events of encounter and dynamic flux of offering-receiving, this follows Simondon's second principle, the subset always in movement. The authors continue:]

Economic actors no longer relate to each other in the simple, unidirectional, sequential arrangement described by the value chain notion. The relationship between any two actors tends to be far more complex than can be conceptually captured by the unidirectional 'make/buy' model underlying the value chain. Instead of 'adding' value one after the other, the partners in the production of an offering create value together through varied types of 'coproductive' relationships. (p.29)

[I am going to keep on re-writing diffractively Norman and Ramirez as follows]

[O]ur view of the offering as the boundary where actors come together to co-produce value leads us to consider actors coming together in a 'value constellation' (p. 54)

[Another diffractive coincidence is the questioning of self contained static identities of the subsets, Norman and Ramirez continue]

[A]ctors participate in ways that vary from one offering to the next, and from one customer/supplier relationship to the next, it is not possible to take given characteristics for granted: co-producers constantly reassess each other, and reallocate tasks according to their new views of the comparative advantage they perceive each other to have. (p. 59)

It is in the encounter that roles and identities are defined within the action or by the activities and in comparison with the others. In this sense, publicity is again all the potential possibilities of becoming, the sense of becoming with others. This text of Norman and Ramirez, confirmed me the rather abstract ideas of Stiegler, Barad and Simondon in the context of market models and value production systems.

To agree with the ontology of the incompleteness by *de-fault* is to enter in an axiology where worth is determined by the potential of covering the debt or supplementing this loss. Worth is in sharing rather than owning a final inert end. Engagement, the very possibility of encounter is worthier than maintaining what is owned, saving from the patina of time, from other's touch or from the efforts of transference *without* loss.

Stiegler affirmed that faults are forgotten and accumulating covering each other, the moment of experiencing the fault, 'is not this or that fault, but the fault of

being-at-fault as such – originary de-fault as de-fault of origin’ (1994, p .259). *Publicity* is then, all possible ways to overcome the sense of fault, a sense or logic that is also shared in public and within things, by exteriorization – or by *offerings* – the value then is in ‘making it public’, visible, available, rather than preserved and locked in private. The value relies on its exteriorization, the value in making of it, what Stiegler called, “the crochets” (or supplement) of our sense of incompleteness (ibid.).

What is proposed by the axiology of *value constellation* is manifested in many practices of *public-private* where the tendency is not to own, and preserve *without loss*, but to share, distribute and engage. On the contrary, within the chain of value mentality, the supremacy of the original thing, its preservation, its control and care is all sediment into stability that goes against the speed of the re-orientation that mark temporality and space that is boost by interest or affection in the event of encounter. In a linear chain of value the supremacy of the thing define, in Stigler’s words, the *who* as well of the *what*, the axiological shift means that the thing is valued as long as it embeds potentialities for encounters.

In sum, the *framework of the emergence* assumes a notion of public that refers to the collective possibilities of becoming and *publicity*, as the agency that these possibilities has in the encounter, the shared need to fulfil the debt or fault and the persisting sense of fault that maintains individuation as an on going processes. *Publicity* as fuel for (dis)continuous encounters between subsets of changeable identities. Privacy in opposition, is the internalized *publicity*, the intimate sense of being in de-fault and the need to maintain the constellation of

encounters going. The *framework of emergence* consider *public-private dynamic foldable (dis)continuum* as a set of practices and ideas that are embedded in *offerings* and that enact differences of *one-others*.

This shift, in the way to consider one-other within reality, generates a shift in the axiological system that disagrees with the principle of the transference *without loss*. Value then, resides in potentialities of as many encounters as possible, in so product is not but an *offering*. With the *framework of emergence* the worth is not in owning but in *offering* possibilities of encounters, sharing, connecting, distributing, following, connecting, poking, etc. Making sense of this shift in value, is making sense of many of *public-private* practices that are in use within *dps* that at first, seems contradictories, for example practices of social media, digital services, such as Airbnb, Uber or Etsy, or that what boost all what is referred as 'shared economy' that I would argue that is not sharing but creating a distributed structure. I am especially interested in the creative potential that practices of *public-private* have and how this renegotiations matter for processes of differentiation

### 5.3. *Public-private* practices and value.

#### **Authority of the original and the value in the encounter**

##### *Digital Public Space the project.*

In original Digital Public Space project (discussed in Chapter One), the conjunction of time and space from where ownership, role and purpose of cultural and heritage institutions was in question, and with it, issues of access, permanence, control but ultimately value, were in that discussion. Digital Public Space (the BBC project) proposes to offer to 'everyone everywhere unrestricted

access to an open resource of culture and knowledge'. This vision has emerged from ideas around building platforms for engagement with cultural archives to become something wider and interactive (Hemment and Thompson, 2013, p. 3): public. Public understood in terms of access (ibid., p. 4), permanently public-funded media and associated information and License Fee Payers availability (Ageh, 2013, p. 6).

The proposal of this thesis is to consider *dps* as an emergent domain of existence, as phenomena, manifesting a series of conditions that challenge power and identity of these institutions, the value of their ownership and, especially, their role as "gatekeepers". This series of conditions that shuffle the sense value of their archives, provoke Digital Public Space project, as a reaction to *dps* phenomena.

I am concerned in this thesis with *dps* phenomena and with reconfiguring a framework to approach it and building a language that allows creating within it, exploring and to becoming with it; A language that serves me to analyse reactions and initiatives mattering within the phenomena.

Within this framework the Digital Public Space – the capitalised BBC's project of open archive – is just one manifestation of, and part of, *dps* – the lowercased, plural, dynamic, foldable, (dis)continuum – but not the phenomenon of *dps* in itself. This distinction must remain permanently clear.

I propose now a discussion of the original BBC Digital Public Space project in terms of the framework that I am proposing. For the 2012-13 project, this BBC Archive Development initiative represented 'a sea change in thinking about expertise and ownership of cultural heritage. The gatekeepers of knowledge and

culture, the 'experts', realise the need to open this effort up, and to actively engage many actors and citizens' (Hemment and Thompson, 2013, p. 5)

### **From Mona Lisa to viral meme**

Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence. This includes the changes which it may have suffered in physical condition over the years as well as the various changes in its ownership. Benjamin, 2011, p. 218

Within the chain of value system that is based on the principle of transference *without loss*, the product was for example a painting, the Mona Lisa. The value was embedded on the product itself. The value permanence as the painting was preserved, value in preventing its *loss*, any loss in that authority of the originality to what Walter Benjamin is referring in the above quote. Ensuring its originality, it is ensuring that it is transferred through out of the chain from the first or original subset or link; its author, to the last; the museum of Louvre. Not loss, transformation or modification must be made or at least not visible, the value is also in the invisibility, in the discretion of the apparatus of preservation.

The addition of all material and conceptual practices of preservation, the knowledge and coordination on the right light, humidity levels, temperature, display, restoration, etc. The whole apparatus that the museum employs for the maintenance of the Mona Lisa. The conservation of that exact and 'unique existence in the world as the same as it was originally, is made invisible and discrete, by the artifices of scientific neutrality, for the identity of the product,

the Mona Lisa, and the identity of the producer, Leonardo Da Vinci, is stabilised in the painting. It is stabilised by sedimentation of the material discursive practices and agencies of an assemblage of apparatus that are producing one and another, as the painting that we can recognise today in postcards and we can visit in Paris.

The presence of the original is the prerequisite to the concept of authenticity. Benjamin, 2011, p. 218

Within the *value constellation* axiological system, based on the transference *with loss* or transference *with offering*, the value of the Mona Lisa is not in the painting, but in the opportunity for encounters. While visiting the Mona Lisa, I am not interested in the aesthetic experience, in art appreciation, in the painting technique, or in its original meaning. The whole point is to *visit* the Mona Lisa, the value is in the visit, and in the possibility that the visit creates opportunities for encounters. It is not enough to visit the Mona Lisa, it has to be recorded and shared. An entry in my personal diary, private and locked, has no value whatsoever. The value is in taking a picture and sharing it.

The photograph, shared in my Instagram account, has capitalised the value of the visit of the Mona Lisa, counting how many likes and shares my picture of the Mona Lisa has. One of my followers thought my face in the photograph was somehow hilarious and made a meme of it that reads 'Mona Chita'. That meme was virally shared and transformed, suffering – or enjoying – millions of adaptations to the caption, background, my face and the Mona Lisa. The value of the Mona Lisa there is the opportunity of loss, or in constellation words, the opportunity of *offering*, offering creative opportunities of becoming,

identification and meaning making. Neither, presence, authenticity nor originality were of any value. It is not just that all the agencies of *apparatus* of preserving the originality of the Mona Lisa lost their agency, or that are now enveloped and visible, but they all lost importance.

Mona Lisa the meme has value not in itself, static fixed product, but in its potentiality to link with others. Issues of ownership, authorship, restrictive access, and permanence – without loss – lose value. The value is on the opportunities of encounters, on sharing, on visibility, creative twists of identity of the product, the last meme, was not the Mona Lisa, that Leonardo intended, nor the one that Louvre offered, not the one that I photographed or my friend converted into a meme. Its identity is an on-going process of becoming in the encounters and the value is in its *publicity*.

The uniqueness of a work of art is inseparable from its being imbedded in the fabric of tradition. This tradition itself is thoroughly alive and extremely changeable( ... )In other words, the unique value of the 'authentic' work of art has its basis in ritual, the location of its original use value. Benjamin, 2010, p. 201

I propose now the exercise of imagining that the curator of Metropolitan Museum of Art in New York decided to exhibit the original Leonardo Da Vinc's Mona Lisa to the American 'public'. The whole *apparatus* to makes possible such transaction, and the estimate value of the transaction itself, will be again on embedded in the 'fabric of tradition' of Mona Lisa. In it will count again its originality, its authorship, its invisible apparatus of knowledge and practices that preserve and transfer – to the American 'public' – *without loss*. It is not just that the meme is totally forgotten, and that it had no relevance for the Louvre-Met



transaction, it is that the number of times it was liked and shared and adapted and transformed is totally irrelevant and made invisible. The identity of the painting is again fixed and stabilised in the 'fabric of tradition', constructing the geometrical 'divisions of interior and exterior that have serves the workings of power' (A reiteration of the first section of this chapter quoting Barad 2014, p. 170).

The authenticity of a thing *is* the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced. ...And what is really jeopardized when the historical testimony is affected is the authority of the object. Benjamin 2010, p. 219

*Dps* manifests in ways that those cultural heritage institutions, the 'gatekeepers of knowledge and culture', find themselves being measured and understood under the value constellation axiological system. Closed in the 'steel chambers' of their archives, there for preservation *without loss*, the conservation of authority of the object, their products what *they* are keep from *us*, may be dead and live, may be an electron or a photon, the outcome of the product became uncertain and with its uncertainty the value is lost. Archives make sense of themselves in this techno-logical setting with a sense of incompleteness and fault, they need the encounter and the distribution to become with a role that reconfigures an identity, to them and to their *offering*. *Publicity* of the archive is the fuel of creative and even political practices, is the force of a rather 'jubilant exploration' (A reiteration of the first section of this chapter quoting Barad 2012, p. 170) in-matter.

[Photography] Instead of being based on ritual, it begins to be based on another practice - politics. (ibid.)

### **Public-private practices.**

One-others generative entanglements indicate that *public-private* is a set of practices and concepts that materialise through discursive-material performativity. The short history of private life in Western Culture confirms that in fact privacy, and by contrast, public life or *publicity*, are an *assemblage* of artefacts, practices and meanings rather than a right, necessity or a thing to defend or to sell. In this sense, *private-public material-discursive* practices have more relation with constructions and enactments of value, identity and meaning than any inner principle that must be preserved, 'gate-kept', transferred – *without loss*. On the contrary, discourses and practices materially enact boundaries of the self and its collective, constituting one self in contrast to 'everyone' in what Stiegler calls the 'eternal theatre of individuation' (2009). The circumference, the circus, the play and the stage of that theatre of self-others is what *private-public* practices are all about, always in tension, *in-matter*, metastable and in constant renegotiation to cover for the sense of incompleteness that by default maintains the encounters in the on-going search for completion.

The interior of my home is my private space, with it I can do and decorate as I please, how it looks or is arranged or what I show to my guests, is no business of any member of the public, neither of the council town or state. Now, if I would like to paint all the exterior walls of my house red, I would need to acquire permission from the town council, which usually does a process of consultation with the neighbours of the house or consults a series of legislation or norm about

the look of the streets in my neighbourhood. However, if I just want to paint just the door and the windows frames red, that is totally legal without any type of permission or consultation. Then, if I would like to drill flower baskets into the front wall, that is not a public problem either. However if I *cement* a flowerbed on the wall, then it would most likely be.

In the case that I display in the front windows an offensive poster, let's say a curtain hung from the internal side of my window that reads in the exterior of the house 'fuck the Tories', that, even if a neighbour complains, it is quite difficult for the town council to get any order that compels me to take the offensive curtain down. If I develop a tradition of standing naked in provocative poses in front of the window facing the front street, the town council cannot release any official document that prevents me from my exhibitionist tradition.<sup>51</sup> Conversely, they can disperse with police force any group of people that congregate in front of my house to appreciate the *offering*. The town council may send a social worker to my house that would test my capacities as a mother or my mental health and, just to avoid the annoyances, I would go back to wearing clothes in front of the front window and abruptly finish with my tradition. The wall of my house is both interior and exterior, is both public and private, is a zone of contesting both public and private, the curtain, the flower pots, the colour of the painting, any exhibition in front of the window and the visit of the social worker, are all practices. Material-discursive practices that respond to values and ideas of what should be public and private and how they matter.

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<sup>51</sup> There is an offence related to public decency, but rules in public spaces.

I am not concerned with an idea of public as a grouping of people, or as state owned, or as a sphere. What interests me about public are the practices that construct that wall, how thick or permeable it is, how closed or open it is, and how values are shaping that wall. I believe *digital public-private space(s)* are constructed exactly like that wall. I am interested in the practices that construct it, negotiations that shape it, and creative possibilities that emerge from it.

### 5.3. Chattr Project and the practices of differentiation

‘Chattr’ is an experimental art and research project in collaboration with FutureEverything Manchester, Kimchi and Chips, a Seoul based art and design studio founded by Elliot Woods (UK) and Mimi Son (South Korea), collaborating with Mel Woods and Drew Hemment from Dundee University and artists and practitioner researchers from The Creative Exchange at Lancaster University.

The project aims to remark on practices of privacy in digital spaces by giving them physicality. It investigates whether a Data-Use Policy (DUP) can be acceptable in exchange for the comfort and perks of a café space. It basically creates a surveillance system, that records spoken words which then get transcribed and published as indelible text on the internet, transforming private conversation into a shareable, mineable dataset uniquely identified as a URL. The Chattr project, running under the slogan “your privacy is very important to us”, found its inspiration in bringing digital social media to a physical environment, to explore actions within the entanglements of physical-digital affecting practices of private-public.

'Chattr' in its two presentations during 2013, FutureEverything (Manchester, UK) and Today's Art 2013 (The Hague, Netherlands), provided a funny service in the conference environment: comfortable chairs, the good views and soft drinks in exchange for the participant's privacy. The project played with visibility and materiality of practices that in the digital context are less visible and to remark on negotiations and enacting of boundaries between physical-digital, public-private, live-archived, and local-global (Salinas et al. 2016, p. 42).

Informative signs were placed so that participants were made aware of the requirement to accept the 'Chattr's' DUP which was designed to mirror those typically employed on social media platforms such as Facebook, Twitter or LinkedIn. Participants were required to carry a recording device within the lounge, for all spoken conversations would be recorded, transcribed and archived in a publicly accessible database that would remain permanently in a public space online. Once transcripts had been published, they became public domain, and the project retained no control over them, thus it might not be possible to erase published conversations permanently, nor to prevent them from being spread through other online social platforms.

The system of rules described in 'Chattr' Data Use Policy (DUP) was:

- Participants must read and accept DUP before entering the 'Chattr' lounge.
- Participants must carry a recording device and return it on their way out.
- Participants' interactions within the space are at their own discretion.
- Recorded conversations are transcribed.

- Unabridged transcriptions are published and available online.
- Participants are responsible for the content of their transcribed conversations.
- Participants can withdraw at anytime. Once a conversation is published online, complete deletion cannot be guaranteed. (Salinas et al. 2016, p. 40)

Behind the scenes of the FutureEverything version, the recording devices were transported regularly to a separate location, where a team of three professional transcribers processed the conversations and then deleted the audio files. After a two-hour reconsideration window, transcribed conversations were published online hourly using PasteBin.com. Snapshots of the conversations were curated and broadcasted through the Twitter accounts @ChattrLeaks and @ChattrBot, posting more than 120 tweets and receiving more than 100 interactions during the festival weekend. (Salinas et al. 2016, p. 44).

‘would it be censored? Uuh we have not looked at the terms and conditions it’s getting personal. did you actually know what you signed for? you sold your soul to them.’

‘This is like kissing whilst being watched. Hmm maybe after a while you don’t think about it anymore.’

‘Chattr’ lounge had a vibrant atmosphere. Players’ reactions constituted the plot of a game space that constituted itself with the rules of DUP. Many players were worried for the quality of their conversations, some asked whether they was allowed to swear, and those who could, chatted in foreign languages. It became even more interesting once people could access conversations via [@ChattrLeaks](#)

and [@ChattrBot](#), suddenly the game became real life, and aware players played it more confidently. Contentious players tapped on the microphone to make their conversation inaudible; impersonated conference speakers or talked directly to the transcribers or to their future digital audience. There were also those who thought that they would be able to control themselves but ended up forgetting about the device and later asking the team to delete their conversations.

In the Today's Art presentation, 'Chattr' maintained the basic rules but with some changes. The low-tech recording devices that in the first version were becoming threatening when attached to participants, was replaced by garden ornaments in the shape of guinea pigs with menacing eyes. The Guinea pigs had a hidden microphone inside and with it the *evil* intentions of 'Chattr'. Mediating technology in-matter gave the experience a different meaning. For a start, delegates were no longer approached with microphone in hand, but the public of Today's Art approached *us* wanting to borrow their guinea pig: 'who cares if it has a microphone inside!? It's so cute!' Some players named the pig, others included it in the conversations, some wanted to take the pig with them and the interplay with the microphone took the personality of the pig, making people forget even faster that they were being recorded and published, in Today's Art in big screens by the café.

'Chattr's' situated system enhanced conflicts and tensions between private-public in hybrid physical-digital spaces, encouraging participants to respond, contest and assume certain attitudes upon their privacy choices and to acknowledge this. In the interplay of physical-digital features co-constituting a

hybrid experience of space, complexities within action within public and private practices emerged in some occasions as disruptive, in others with hilarity.

'Chattr's' design and the deliberate ambiguity in how information is presented made manifest tensions between public-private spaces. Looking at how participants negotiated their privacy choices in the entanglement of physical and digital, public-private character of the digital public space. (Salinas et al. 2016, p. 58). In each of these instances, public-private is understood not as defined by clear boundaries, but as discursive-material practices constantly negotiated by participants who are in a ongoing reconfiguring, defining and redefining those categories of blurred frontiers producing a new space with its own value in practice and public.



## Inventory of words that matter n.5

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- *Originary sense of incompleteness or publicity*

What interested me the most about Stielger's sense of fault or incompleteness, is that it is programmatic or according with Stiegler, *de-fault origin and origin by de-fault*. In this sense, incompleteness is that fuel of encounter and externalization.

I proposed *publicity* as the Stielger's "being-in-common" (2009 p. 8) that originates both the individual and collective as the resolution of the individual way of dealing with its sense of de-fault. 'One' or the individual, for Stiegler the *who*, become through the difference from its *milieu*, that *who* entails within *publicity*, this is all possibilities of being (differences) that is being-with-one-another. (ibid., 49).

*Publicity*, is then the encounter and difference of *one-others*. I have appointed the neologism *publicity* as key for the whole *framework of emergence*. This is *publicity* conglomerate all potential possibilities of being just like Barad's idea of 'living, breathing, jubilant' void, conformed by virtual particles, mere possibilities of being and time, the potentialities of existence, particles that may be or not, "It is a living, breathing indeterminacy of non/being.

In sum, *public* is again all the potential possibilities of become, and *publicity* the sense of becoming with others.

- *Lack of publicity or privacy*

Privacy in opposition, is the internalized *publicity*, the intimate sense of being in fault and the need to maintain the *constellation* of encounter going. I propose privacy as a lack, rather than as something to keep or defend, I propose to move away from the idea of identity forming in privacy, but rather privacy is the impossibility to become. With this proposal I dismantle many discussions of digital public space and privacy that are predominant in media, academia and everyday life.

- *Technical mentality*

Mentality of technics, the mentality of the tool, the programmatic quality that Stiegler proposes as *publicity* of the exteriorized memories or technics, is the same mentality of the reason. One does not program the other, it is the *same* mentality that manifest in reason and in machinery systems, and both human and nonhuman share same mentality or *publicity* through tools or techno-logical systems.

The technical objects are regimens of in-formation, and humans even operating them, using them, or inventing, are part of the regimen of functioning and existing under *the same* mentality. All objects and subjects share a process of individuation and completion that means losses and gains in the encounters.

- *Transference without loss*

Simondon contests the analogical *technical mentality* using what he called, the principle of *transference without loss*. He sees this principle reigning not just in the way that analogue machines work, but in the way reason is developed as a

lines continuous linking of elements, forma begging in to a end, *transference without loss*. Simondon, remarks that in every encounter there is loss and gain, and any of the entities from the encounter, remain the same after it. This continuity is the key principle of the technical chains that Simondon contests, proposing discontinuity instead not as the transference *without loss* of linearly linked subsets, but as *successive waves*.

- *Value constellation and offering*

This idea is taken from Norman and Ramirez (1998), and proposes sequential tendency of value system is which each actor gets more value when is connected simultaneously and in direct relation, the value in this sense is the lost of the actor, but is gain of the product as it constitute an 'offering'. Each actor would have multiple events of encounter and dynamic flux of offering-receiving, this follows Simondon's second principle, the subset always in movement.

*Offering* implies, *loss* and encountering, but more importantly is not an static 'offer', a fixed end, but an activity. I am considering *offering* activities or better, the accumulation of activities, rather than an inert end of chain. The term *offering* also encapsulates the meaning of 'transference *with loss*' which is produced in the event of originary encountering.

- *One-others differentiation*

To agree with Simondon and Stiegler's incompleteness of the *ontogenesis* and with Barad's ontological *debt*, is to enter in an axiology in which worth is determined by the potential of covering the debt or supplement this loss. Worth is in sharing rather than owning and final inert ends. Engagement, the very

possibility of encounter is worthier than maintaining what is owned, saving from the patina of time, from another's touch or from the efforts of *transference without loss*. It is in this catalytic encounter that one and others become and differentiate in the same process, or what Barad will put *cut-together-apart* in one move.

## Chapter Six.

### *Space-place (dis)continuum*

- performing the fold and enacting cuts.

## 6. *Space-place (dis)continuum*

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### Performing the folds and enacting cuts

I am going to start again from the *digital-physical* principle of *coexistence*, as it is the most eminent characteristic of *dps phenomena*. This principle of *coexistence* that manifests so palpably in everyday experiences; in the hybridity of objects (I am thinking on Internet of the things), spaces; (smart cities, smart transport) and advanced mobile connecting technologies, is opening ontological and epistemological questions, shuffling traditional assumptions and traditions of both science and humanities, and offering new creative opportunities and new ways of thinking about practices.

*Digital public space(s)* considered as the *transductive entanglement* of *dynamic foldable (dis)continuums*; *digital-physical*, *matter-in-matter*, *interior-exterior* and *public-private*,<sup>52</sup> do not just affect a sense of place but propose an interrogation of *time-space*, of pre-existing, definitive, stable and neutral coordinates.

*Digital public space(s)* do not take place “somewhere else”; they are *taking place* in the same space. In this chapter, I am opening a conversation that proposes *space-place (dis)continuum* as *dps* capabilities for both *making spaces* and *taking place* in a present now and right here. In contrast to other digital generated environments, *digital public space(s)* are not “there” or “somewhere else” *to be*

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<sup>51</sup>I discussed Digital public space(s) as plural, inclusive and low cased, in Chapter One.

In here, ‘*transductive*’, refers to Simondon ‘*transduction*’, elaborated in Chapter Three.

‘*Entanglement*’ refers to Barad’s takes on quantum ‘*entanglements*’ explained in Chapter One.

The semiotic-material idea of *dynamic foldable (dis)continuums* is presented in the Interlude as a figure I proposed to make sense of the relations in tension within *dps* phenomenon.

I developed the ideas of *matter-in-matter* and *interior-exterior*- in Chapter Three and these are to do with time and memory perception.

I elaborated the *digital-physical* in Chapter Four, and the one-others and *public-private* in Chapter Five.

*visited*, but rather they are *taking place* and *making spaces*, right here. Coexistence or simultaneity, then, is their main principle. Different from cyberspace, the subjects of *space-place (dis)continuum* are not visitors, surfers or navigators. They are active subjects, making, playing, encountering, producing and becoming through *dps space-place*. *Space-place* is always a doing, a set of actions, always active and conjugated with an active verb. The grammatical tense of *dps* is always present continuous.

I depart from the idea that *space-place* is constantly reconfiguring experiences of space within the same place. This understanding of *space-place* implies two things. Firstly, it must appeal to frameworks that interrogate the Newtonian concept of space. Secondly, theories that address digital generated spaces and cyberspace (Levy, 1998; Kitchin, 2000; Benedikt, 1991; Novak, 1991; Loader, 1997; Burrows, 1995; 1997; Dodge and Kitchin, 2001) are insufficient to approach *digital public space(s)* because they refer to the digital as “somewhere else”.

To elaborate on this consideration this chapter continues with the diffracted readings of philosophy of technics of Simondon and Stiegler, and *agential realism* of Barad, to build a language that encounter *dps* “right here”, I include the ideas of counter and juxtaposed spaces from Foucault and Magic Circles from Johan Huizinga.

For local authorities, academic departments, funding bodies and policy makers, measuring the impact and evaluating projects that have do with hybrid spaces is very difficult. Their traditional parameters – number of attendees, volume, shape, length, commercialization and profit generated – have been shown to be

insufficient, to communicate the value of creative explorations and experiences. In the last section of this chapter I am discussing two CX projects that deal with subject and matters that do not easily fit into the existing parameters; the ephemeral, the juxtaposed, the temporal or timeless, are parameters more prominent, those do not fit, but in stories, encounters, connections, illusions, possibilities, memories. My purpose is that *space-place*, discussed through the *framework of emergence*, works out forms of approach and evaluates such projects responsible and in response to its nature. The intention is to weave a conversation that thinks *in* methods about *digital public space (s)* creative practices.

## 6.1. *Digital publics space-place(s)* topology

... a method of diffractively reading insights through one another, building new insights, and attentively and carefully reading for differences that matter in their fine details, together with the recognition that there intrinsic to this analysis is an ethics that is not predicated on externality but rather entanglement. Diffractive readings bring inventive provocations; they are good to think with. They are respectful, detailed, ethical engagements. (Barad, 2012b, p. 50)

I continue to read diffractively Barad's ideas on *spacetime mattering* (2007; 2010) with the work of Simondon (1992) and Stiegler's ideas of technological time-space (1994; 2009; 2011) to advance on the *framework of emergence* that considers *space* becoming in between *folds* of socio-technical *polarizing membranes* and *discursive-material apparatus* (as discussed in Chapter Four). *Place* accordingly is the becoming pole or point of encounter that produces/ing the *fold*. I am arguing that such space and place are relative to each other and are in generative tension. I posit such generative tension as *space-place dynamic*



*foldable (dis)continuum*. In this sense, *space-place*, more than geographical coordinates or static void, is considered as movement, as force, as an infinite net of entangled *intra-actions*.

Baradian *agential realism* reveals assumptions of the Newtonian concept of space that are far from the neutrality that it claims to possess:

Calculus is revealed as the escape hatch through which Man can take flight from his own finitude. Man's reward: a God's eye view of the universe, the universal viewpoint, the escape from perspective, with all the rights and privileges accorded therein. Vision that goes right to the heart of matter, unmediated sight, knowledge without end, without responsibility. Individuals with inherent properties there for the knowing, there for the taking. Matter is discrete, time is continuous. Place knows its place. Time too has its place. Nature and culture are split by this continuity, and objectivity is secured as externality. We know this story well, its written into our bones, in many ways we inhabit it and it inhabits us. (Barad, 2007, p. 233)

What Barad describes is a certain 'man-playing-god' ambition to control and possess each thing and time in its place. Stiegler refers to it as 'pathological obsession with place' (1996b, p. 87), that originates a knowledge and material structure of stabilizing space into even, measurable and geometrical, axes, calendars, architecture and physics. Here, Stiegler argues that space is made divisible in order to be owned. In contrast, Foucault has the idea that space is divided for us to be "owned" in it. Foucault has referred to this as 'the space of emplacement'; a thing's place that is no longer anything but a point on a scale of man-made coordinates. Foucault proposes and altogether more wild kind of space:

The space in which we live, which draws us out of ourselves, in which the erosion of our lives, our time and our history occurs, the space that claws and gnaws at us, is also, in itself, a heterogeneous space. In other words, we do not live in a kind of void, inside of which we could place individuals and things. We do not live inside a void that could be coloured with diverse shades of light, we live inside a set of relations that delineates sites which are irreducible to one another and absolutely not superimposable on one another. Foucault, 1986, p.23

What this passage reveals is that Newtonian space is not merely given but is materially performed; boundaries are enacted and matter is sedimented to fit into the grids of our maps. What is at issue is not the relative truth or falsity of Newtonian calculations of space, but that such calculations are enactments rather than neutral descriptions. Barad takes a step further and invites us to open up *space* to possibilities for other enactments.

### ***Spacetime mattering and topologies of manifolds***

For Barad, the entanglement of temporality with on-going processes of materialization proposes a framework for a space always as *spacetime mattering*. Barad's arguments about space move away from space as a neutral, external, factor from which distance movement, things, volumes can be measured and space as measurable, as stable container.

*Spacetime mattering* is not a point in between the space-time axes, or a location in the infinite celestial firmament, nor is it the infinite celestial firmament itself. Originally, it is a verb conjugated in present continuous tense. More than a verb, it is originary. It is a force, or more specifically, a material-discursive structure of *intra-active* forces. I would add, according with the conversation from previous chapter, forces *in-matter*.

*Agential realism*, in essence, considers agential matter and agency distributed through humans and nonhumans emerging differentially from discursive-material enactments of boundaries;<sup>53</sup> exterior-interior and within-without; a process that marks spaces of time and with it, marks spaces too, an on-going *spacetime-mattering* of the world's becoming. It is the making/marking of these boundaries that makes *spacetime-mattering* dynamic.

Baradian *spacetime-mattering* is, then, much larger than its shape, position, locations or places of the bodies that occupy it. She proposes *forever-changing manifold topologies*, not neutral but biased, *agential*. Baradian *spacetime-mattering* is discursive-material structure of possibilities emerging in between folding and enfolding of possibilities. Here, space is always considered as a discursive-material enactment of differences never sitting steady, never given but produced, contested and generated by and generative of material-discursive practices.

I am staying with Barad's idea of a *topology of manifolds* in constant re-configuration. Space understood in this dynamic topological sense, requires a shift in its analysis, and she proposes, 'questions of size and shape (geometrical concerns) must be supplemented by, and reevaluated in terms of, questions of boundary, connectivity, interiority and exteriority (topological concerns)' (2007 p. 244). The *framework of emergence* I am building, proposes *space-place (dis)continuum* to address questions of boundary making, connectivity, folding and enfolding, encountering and enacting, memory and imaginary, coincidences and differences and practices that explore place and space of possibilities.

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<sup>53</sup> See above, p.

### **“Plissement” and socio-technical milieu**

Simondon developed the idea socio-technical milieu in his theory of individuation which also moves away from the geometrical notion of time and its spatialization, to define space away from Cartesian axes. Importantly for Simondon as well as Barad, spatiality is generative. His *milieu* is more than a background or context; it is a regimen of functioning, an ideal and material programmatic structure of individualization and technological production, a ‘place of operation of existence’. Simondon defines *milieu* as a pattern of energetic exchange, ‘spiked with references to time, recurring causality, absolute origin, coming potential, and the immanence of the technical object’s schema of concretization to matter’s becoming (2012, p. 28)

The pre-individual *milieu* and associated *milieu*; or interiority and exteriority, are ideas of space always weaved with becoming, becoming living or non-living. In this sense the ontological becoming for Simondon is post-human as well as for Barad. It refers to technical objects as well as the human beings ever-constituting each other as part of the catalytic encounter of disparities poles.

In theories of individuation, the folding in *polarizing membranes* differentiates the associated *milieu* into exterior and interior. *Membranes* create space and time as associated milieu; the space surrounding the boundary or *membrane*. Not fundamentally a spatial concept, space is then liable to fuel the technical object. In accordance with Chapter Four, I am connecting the ideas of *originary polarizing membranes* with Baradian discursive-material performed boundaries and the agential cut, that coincided on topological arrangements and spatial enfolding, difference and the anew that does not emerge in abrupt cuts, or

sudden ruptures, but in simple folding or torsion of materiality into “plissements” and “re-plissement”; a *space-place dynamic foldable (dis)continuum*

The process of transduction not only generates the coming together of disparities, enfolding, but it creates a mode of territorialisation or spatialization, a mode of production of a field, or terrain that surrounds and enables the becoming and its transformation. (Grosz, 2012, p. 42). The essence of Simondon’s ideas of spatialisation is that a part of the *milieu* always persists in the new dimension, it does not extinguish in the catalysis, so the emerging dimension is an ever-emergent *milieu* in the creation of differentiation. This is an energetic condition more than a place-able neutral space.

Spatial or topological folding, or as Simondon called it (and I found more beautiful and illustrative) ‘plissement’, constitute the difference of the interior and exterior, that is temporalizing, also marking the difference of past and future, one-others. Place in the *milieu* is the pole where influence is concentrating to be polarized. In the individual the associated *milieu* manifests in being as invention, reason, imagination, memory and the perception of situation of separation from the original at the same time that becoming and differencing in a transductive relation. (Michaud, in de Boever et al. p. 122).

### **Techno-logical re-doubling**

Stiegler expands upon Simondon’s ideas of socio-technical re-production. For the former, the emphasis is on processes of exteriorized memories into *what* and internalization of the technical production – the *what* into the *who*. With Simondon, Stiegler advances the theory that in the ambition to stabilize time and space, time is exteriorized into the *what*, or techno-logical time. Technological

time then comes to constitute the temporality of the *who* (1998, p. 210). Time is then constituting and differentiating the *who* and the *what* in a *transductive* relationship. The question of time is that of ‘the relation between *who* and *what* such that appears to be the knowledge of a difference’ (1996, p. 211). Technics does not just aid memory, it *is* memory, originary and assisted.

Stiegler sustains the idea that the acceleration of technical reproduction has dis-oriented the *who* into the *what*, into what he posit as space-time *re-doublement*. Stiegler understands space and time as actions, that interiorizing-exteriorizing movement is spatio-temporization: the conquest of time and space is always already de-temporalization and de-territorialization (2009, p. 65). In the efforts to grasp it, to calculate it, predict it, control it and standardize it, the *who* de-territorializes and de-temporalizes time and space into the *what*. Stiegler calls this Newtonian passion for finitude and control a ‘pathology of place’ and understand the obsessions to stabilize place with rhythm, calendar, architecture and into grids, as an obsession for *who*’s ambition of grasping the exterior.

Stiegler’s idea of *re-doublement* has to do with the speed of the technics, the *what* to absorb the *who*, to dis-orient it. For Stiegler, the techno-logical accelerates faster than culture. The difference in speed makes this techno space-time re-fold in itself, absorbing the *who* into it. The *who*, however will always have the need, the vital instinct to re-orient itself, creating a tendency of doubling and *re-doublement* in transductive meta equilibrium

This idea of *re-doublement* accords very well with Simondon’s idea of *re-plissement* and Barad’s idea of *re-turning* – re-turning, turning it over and over again (2014, p. 184). With these notions I understand space as movements of

poles, a *(dis)continuum* of entities folding into each other to produce each other in the encounter, becoming within a point in place subjected to be opened up into another space. A foldable *space-place* that is not neutral but that it has generative agencies affecting interior-exterior, matter-*in-matter*, one-others, past-future and *space-place*.

The essential difference between Stiegler and Barad is that the first even after acknowledging a subject disoriented into *what*, and the interior within the exterior, still sticks until the very end of its trilogy, to refer to the *who* and the *what* as separated entities. Even maintaining that *who* is nothing without the *what* and there is an amalgamate, a transductive relationship and their relation follows the logic of the supplement, Stiegler still refers to them in binary differentiation. For Barad the differences are material-discursive and performative. The identities are not just dependent on the apparatus, but on the context, that agential *spacetime-mattering*. For Barad as well as Simondon the *who* and the *what*, living and nonliving, human and nonhuman are produced in the encounter and in response to space and time. Simultaneously, space and time is the response of this co-constitution.

## 6.2. Stuck in the same place

### **From cyber space to digital public space-place(s)**

Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters

and constellations of data. Like city lights, receding...— William Gibson,  
Neuromancer



Figure 34 Internet.Scholastic first discovery book, front cover, sourced at <http://www.exodusbooks.com/internet/18042/>

Cyberspace was *somewhere else*; an immaterial, parallel, virtual universe to be visited, navigated or even surfed. It was the epitome of the de-territorialized and de-temporalized realm of the *what*, that Stiegler describes. Cyberspace predicted that place-based activities were becoming spaceless, and was described with an idea of its placeness replacing geographical place. (Kitchin, 2000, p. 14-16). In contrast, *digital public space(s)* conjugate in its present continuous tense, are actions, it is Stiegler's *who* re-orienting, but the *who* is both *who* and *what*; human and non-human entangled. Within *space-place (dis)continuum* producing both interior-exterior, digital-physical in dynamic entanglements space-places re-folds, a re-returns, in itself and digital comes back to matter.



Digital public space(s) become through practices, agencies and actions. They do not have visitors but makers, players and active material agents; human and non-human, people and code, meaning and matter simultaneously constituting each other within a *space-place dynamic foldable (dis)continuum* that is also active, constituting, nursing interior and exterior, place and space, in and out.

The idea of “elsewhere” comes back to a palpable “right here”. This traffic of exteriorization, confirms again the ideas *virtual* rendering or materializing discussed in chapter one; that described the *virtual* in process of materialization or exteriorization; getting actual or getting digital. In this generation, *virtual* implies a journey, a time and space. *Virtual* is in on-going transit; from consciousness to actual from possible to real, and then, from actual to digital. We are currently experiencing a movement from digital to actual, actual that is now digital-physical. Subjects-objects, that *who-what* that Stiegler struggles to recognise, in *dps* practices are pulling and playing with digital in an actuality that is anew, not purely digital, nor purely physical but that are both in coexistence constituted in a dynamic space-place making.

Reconfigurations of *space-place* becoming “right here” is essentially different from the cyber-spatial ideas of “elsewhereness”, “spaceless”, “placeless” and immateriality. *Dps* is elsewhere re-turning, in a Baradian sense, or redoubling – in Stiegler’s sense – into an ever-changing “*righthereness*”. The constituting, coexisting, simultaneous *space-places* are require its own framework, as the cyberspace model is definitely out of date with its present continuous. I am proposing the *framework of emergence* and with the intention of building a language with which to approach *dps*, I am turning to *other* spaces that have

been theorized not in parallel, but simultaneous with place, such as Foucault's *heterotopias* and Huizinga's *magic circle*.

### **Heterotopias**

A heterotopia is a part metaphorical, part fictional phenomenon that was described by Foucault in his short text 'Of Other Spaces: Utopias and Heterotopias' (1986). There, Foucault proposes heterotopia as 'capable of juxtaposing in a single real place several spaces, several sites that are in themselves incompatible' (p. 27).

More than mere utopias, heterotopias have connotations of 'counter-sites', utopian *enactments* that take place to simultaneously represent, contest and invert elsewhere sites into a mixed, joint experience of a 'heterotopology' nature. (pp. 24-25). This means that heterotopias are not simply a site emplaced somewhere, but are dependent on agencies, human and non-human:

As for carpets, they were originally reproductions of gardens (the garden is a rug onto which the whole world comes to enact its symbolic perfection, and the rug is a sort of garden that can move across space. (ibid., p. 6)

Heterotopias have an important accumulative character; they accumulate everything, the idea of an archive thing or space that makes accessible 'all times, all epochs, all forms, all tastes', a sort of 'perpetual and indefinite accumulation of time in an immobile place' (p. 28). Foucault affirmed that museums and libraries are the modern heterotopias par excellence.

Foucault proposes that, unlike public spaces, heterotopic sites that are not always freely accessible. To get in, one must have certain permission, or enact

the right gestures. Heterotopias have the appearance and offer the experience of being open and public, however Foucault warns that this is an illusion, and explains that entering, in fact means an exclusion.

I understand digital public spaces-places as *heterotopian* as they share some of the same principles: they are temporally juxtaposed spaces within places, that produce anew spaces-places, ruled by different forces and codes, with the character of counter-space, with access to other time-memories and with encountering and divisions of its enacting boundaries.

### **What do we call the inhabitant of magic circles?**

Who is “in” *digital public space(s)*? I draw from Huizinga’s ‘magic circles’ and ideas of play elements in culture developed in his ‘Homo Ludens’ (1944). Magic circles of play have ideal and material, aesthetics and ethical qualities that I can also identify in the *dps* ‘making spaces’ and ‘taking places’. Like *magic circles*, *digital public space(s)* also live outside of ‘ordinary life’ within the same place.

I propose to use Huizinga’s idea of *magic circle* to characterizes practices within the *space-place dynamic foldable (dis)continuum*. I found *magic circles* especially useful to resolves the conundrum of how to refer to *dps*’s inhabitants or subjects. This is not just a question of nomenclature, but necessarily a problem of meaning making that affects the quality and degree of agency of *dps* “people”, not yet to be confused with “net surfers”. Disciplines like Digital Humanities, STS and Human Computer Interaction fail to offer *dps* a term which names its inhabitants makers; ‘user’ is not adequate. *User* is at one end of the interaction, at the other end the computer. *Digital public space(s)* take place in an entangling of human and non-human *intra-action*; the ends are amalgamated.

Moreover, for *digital public space(s)* to *make space* and *take place*, the willingness and will of its agents is required. Addressing *dps* hybrid human-nonhuman agents is therefore an urgent task. The term ‘maker’ for example has the connotation of duty, a job that requires certain techniques, an artisan with discipline and tradition. Agents becoming within *dps* do so outside of the reasonableness of practical life. This becoming has little to do with necessity or utility, duty or truth and more with a sense of playfulness.

When I collaborated in projects that encounter *dps*, I struggled to refer to its people as ‘members of the public’, ‘audience’, ‘participants’ or ‘patients’. These terms present similar problems to *user*, and create a line of separation – audience/performance, participant/product, patient/treatment. *Digital public space(s)* are *making spaces*, *taking places* in encounters within people, rather than in their separation.

Huizinga’s examinations of elements of play in culture demonstrate that the contrast in between seriousness and play is ‘neither conclusive or fixed’. The contrast between play and seriousness is ‘always fluid’ and what is more, play ‘turns to seriousness and seriousness to play within the magic circle ‘children’s games, football, and chess are played in profound seriousness; the players have not the slightest inclination to laugh’ (ibid, p. 8).

Huizinga describes the player with a series of elements. Firstly, the play is a voluntary activity, affirming that ‘play to order is no longer play: it could at best be but a forcible imitation of it’ (ibid., p. 7). Play is free, and it is an act of freedom (ibid., p. 8). Secondly, play does not occur in “ordinary” or “real life”; the

player steps into a temporal magic circle that Huizinga describes as a 'sphere of activity with a disposition all of its own' (ibid.).

Lastly, the magic circle of play is made to be limited. It is 'played out' within certain limits of time and place and contains its own course and meanings (ibid., p. 9). Huizinga compares magic circles with the 'warp and weft of a fabric' (ibid., p. 10). The temporal element, its finitude, its "plissement", are qualities proper of it's fabric, a fabric that is to be opened and closed, pulled out, rolled over and turn under. This resonates with Foucault's description of heterotopian spaces as rugs, and my own ideas of *space-places dynamic foldable continuum* making spaces and taking places in its loop.

According to Huizinga, all play moves and has its players within a 'play ground marked off beforehand either materially or ideally, deliberately or as a matter of course'; a 'consecrated spot' (ibid.). The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice, are all both *in-forming* and functioning playgrounds, forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All of them are temporary worlds within the ordinary world dedicated to the performance of an act apart. Inside the playground an absolute and peculiar order reigns, it creates order, *is an order*. Such order is again similar to the rules or laws by temporal hybrid *spaces-places* occur.

For Huizinga the rules of the play are a very important factor. Once established, they are irrefutable. If the premises are questioned the game collapses. The game contains rules, which can be broken or bypassed; one can cheat or bluff, but if one challenges the game itself, one spoils it; the game is over or it becomes a

different game. As Huizinga says, 'the umpire's whistle breaks the spell and sets "real" life going again' (ibid., p. 12). In this sense, magic circles are a social space, the agreement on rules promotes social grouping. The cheat and the hypocrite have always had an easier time of it than the spoiler, which Huizinga refers to as apostates, heretics, innovators, prophets, conscientious objectors, the outsiders of the sacred place.

*Space-place (dis)continuum* is *making spaces* and *taking places* in an almost spontaneous way, willingly, playfully in Huizinga's sense, but not with the same agency or mastery in all participants. Becoming within *digital public space(s)* is not exclusive; I do not cease to be female, Venezuelan, single mother, divorced, academic, etc. I am myself and my identity could temporarily hybridize with another of my role in *dps*, but not necessarily and not forever. I play a role, a part. Judges about to administer justice step outside "ordinary" life as soon as they are done with their wig and gown. The identity of player, the essential oneness of the two goes far deeper than the correspondence between a substance and its symbolic image. It is a mystic unity. The one has become the other. In his magic dance 'the savage is a kangaroo' (ibid., p. 25). I stay with ideas of "kangaroo" identities within "kangaroo" *spaces-places*.

### ***Response-ability*<sup>54</sup> in the methods**

Responsibility is not an obligation that the subject chooses but rather an incarnate relation that precedes the intentionality of consciousness. Responsibility is not a calculation to be performed. It is a relation always already integral to the world's ongoing intra-active becoming and not-becoming. It is an iterative (re)opening up to, an enabling of responsiveness. Not through the realization of some existing

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<sup>54</sup> C. Inventory 6.

possibility, but through the iterative reworking of im/possibility, an ongoing rupturing, a crosscutting of topological reconfiguring of the space of response-ability. Barad, 2010, p. 77

The *framework of emergence* considers *space-place* not as the stage, but as the play. Spaces *taking places* and places *making spaces* within a *dynamic foldable (dis)continuum* are always about memory threads. *Digital public space(s)* are becoming through responses of players, human and non-human, and these players become through digital public space(s), responsibility or rather *response-ability*, is part of the processes of *spacetime mattering*.

I am proposing a *framework of emergence* stuck in ethics, dependent upon the catalytic encounter, with one-others responses. Responses are the fabric of *space-place (dis)continuum*, where-when enacting the cut, performing the fold, questioning how differences are constituting here-there, then-after. *Response-ability* for Barad is 'to put oneself at risk, to risk oneself (which is never one or self), to open oneself up to indeterminacy in moving towards what is to come. Responsibility is by necessity an asymmetrical relation/doing' (2010, p. 264).

This on-going awareness of the permeability of the boundaries, of the entanglements of who-what make us inevitably response-able for the (re)configurations of our practices. If *space-place* is ultimately a space of possibilities, *digital public space(s)* take place with these possibilities in practice.

*Dps* inevitably is dividing and encountering, cutting and folding, the exterior into the interior; "cutting-together-apart" the exterior within in practices of re-configuring boundaries. How to constitute an ethics of becoming? What if we were to recognize that differentiating is a material act that is not about radical

separation, but on the contrary, about making connections and commitments, the gentle “plissement”?

With the framework of emergence, I propose participative forms of art, design and creative practices to interrogate and respond to constitution of space-places that simultaneously co-create and co-constitute researcher, researched in between its creases. Barad’s ‘Meeting the Universe Halfway’, concludes with a chapter on ethics. Before close the book, I asked to myself how to put in practice, its ethical-onto-epistemology. I cannot claim that it works in practice, but this thesis relates my experience at exploring with the framework of emergence and think *in* methods about *dps* creative practices with its diffractive spirit in mind.

I was collaborating in projects to do with *digital public space(s)* at the same time that I was diffracting Barad’s and Simondon’s ideas of *space-place* as an assemblage of entangled and distributed forces. These ideas inevitably translate in the methods and understanding of the projects, at the same time reconfiguring me as practitioner, the projects, and my own theories and ideas of *digital public space(s)* in practice. In this sense, practice, philosophy and the narrative of what is happening are also diffractive.

### 6.3. Being There, a story of the methods.

‘Being There’ was a collaboration of historians from Lancaster University and University of Central Lancashire, Cheshire East Council and The Creative Exchange, with the participation of Cheshire Military Cheshire Archive and Local Studies and Cheshire Regimental Museum. It explored modes of local archive



engagement in order to imagine possibilities of a physical-digital First World War memorial, specific to Cheshire East.

The project emerged from a Cheshire East Council initiative to remember WW1 using interactive or immersive digital-physical technologies. Their original idea was to commission a piece that simultaneously remembered and educated a diverse public of the locality. The project aimed to move beyond over-used representations of WW1 – poppies, the trenches – and make use of the specific local history; how people from Cheshire experienced war, through news arriving from the war front and at the home? The challenge of the project was an issue of place.

Cheshire East local authority covers a territory that was delimited quite differently during WW1. Cheshire East it is also quite rural. It includes important communities and sites of interest, but it did not have a capital town or main city during WWI, nor does it today. This presented the project team with two challenges. Firstly, there was not an obvious location for the memorial, so the piece had to be mobile or itinerant. Even trickier was that the intention of Cheshire East was to remember a WW1 that did not happen in Cheshire East itself. The memories from WW1 were from some other places, or memories of the people that stayed, elderly, woman and children, that constituted the ‘home line’ of the war. So part of the project was about representations of somewhere else “right here”, a fold in time-memory and space-place.

This emphasis on local, alternative, stories from WW1 set a project tone that proposed not just to remember the dead but also to remember who lived through war time and their experience; memories, imaginary, letters, souvenirs

and cultural changes, not all of them negative. For example, Cheshire was home to Belgian refugee camps that, among other things, left the community a culinary legacy: cheese.

The war experience at home also included the deaths of many relatives, but also other themes typical from the war's home front, such as shortage of food, different distribution of work, changes of the female roles and activities in society, divisions and separations but encounters of other cultures in the refugee camps and POW camps. This also meant the exclusion of some cultural manifestations; the disappearance of all markets related to Germany, which included toys, food and shops. There were also popular manifestations, like music, theatre, jokes and games. Waiting and expectation were cultural features: waiting for post, waiting for news, waiting for loved ones to come back.

War memorials are a physical or digital monument standing in the name of the dead; a site to visit; a place for remembering and commemorating the fall. 'Being There' set to explore the design of a totally different thing, a place that opens spaces for visits and travels, an places for encounters with the stories of those who stayed behind when the war came. The project therefore aimed to represent, not just the names and numbers, but something less tangible, in-material, like the experience of staying, experiences of others and 'othering', the waiting, the sharing, the fear, the celebration, the novelty of a souvenir. Another premise of the project was that it had to be interactive. The audience would not just be spectators of something symbolic, but had to participate, they were to 'take out' from it, make, interact, play, and learn. So it was a memorial that was not quite a memorial; a *dps* memorial conjugated in present continuous.

The project scope extended to an explorative phase, which aimed at imagining what a *dps* memorial like that would look like. Considering possibilities for artistic intervention or that would best capture Cheshire's specific story. The local council built up with the communities a local archive with its online counterpart, collecting local stories, artefacts, letters and mementos from WWI, basically what people could have in their attics, or names and their tales from a family member or relative. That archive, called Cheshire East Self Reflection, was the main source of 'Being There', and led the historians to think about the specificities of the local communities and to explore emerging themes that could inspire the Being There *dps* memorial.

The other sources of the project were Cheshire Archive and Local Studies, and the Regimental Museum. Usually historians collaborating with artists or museums for commemorative exhibitions would know specifically what they were looking for; names of soldiers who died in specific battle, names of civilians who died in a specific attack, stories of soldiers, and so on. In this case, historians were working with archivists and cultural researchers to dig for stories that were unclassified. The piece would have to be designed on the basis of what stories appeared, and which ones were most inspiring.

The historians were digging for the unknown within in an ocean of paper, dust, broken stories and half told tales, pieces of something that could be. It was a hard task. In addition, part of their work was to discard typical WWI themes that are recurring in the WWI history of other parts of England, like the developing of a medical research and production of prosthesis, the developing and importance of train networks, bombardments, big iconic hospitals. Given that Cheshire is not

the home of a major city, the material found was more in the vein of recipes, food packages, smells and other unexpected changes of the everyday life on the home-front, like the absence of horses in agriculture and the implications of it. School practices changed. When the head teacher called the name of a student, it could mean news about their father was about to be given; it meant expectation and the fear. Cheshire East did send soldiers, but for the most part the men sent to war were those whose role was taking care of horses, travelled with the soldiers but did not see combat. Historians found souvenirs from many of these men. Coins, stamps, spices and other treasures from were sent back home stuck to letters. Objects from Germany and Belgium to Egypt, Persia, and the Ottoman Empire, all made their way back to Cheshire.

The other part of the research process of Being There was to put that compilation of material artefacts of the experiences of WW1 into a collection and form into stories ready to be shared with technologists, designers, artists and makers. With these collections, they were to think about the 'kind' of *space-place* (*dynamic, foldable* and *(dis)continuum*) it would be possible to build, inspired by that material, and how it could best represent WW1. The material was divided according to a few main themes: soldier stories, that included the itinerary of the expeditions, with maps, and descriptions of the places, as well as the tributes he received from his home town; life at POW and refugee camps, and sensorial things; smells, sounds and food that were typical in the cultural life of the home-front.

An interdisciplinary group of historians, geeks and artists discussed this material and thought together, rapid prototyped and brain stormed about possibilities

that varied from locative, game, participatory theatre, fictional personalized WWI story machines and participatory built light sculpture. Researchers synthesized these findings and ideas into what is possible and what was less practical according with the parameters that the local government proposed.

It was clear from the beginning that the “piece” had to be inclusive and participatory; the space for remembering had to include memories from many. Every time that the research team were discussing findings or ideas, in the train or having lunch in a public space, the attention was drawn, and the team ended up in many occasions attracting a small group of people passing by that was busting to give us their opinions, ideas and share with us their memories. As the project advances it was getting obvious that it was a project that did not belong to “us” but was “other’s” or was becoming through the encounter: we were designing for *digital public space(s), enacting cuts and performing the fold*.

The team realised that ‘Being There’, was not about the expertise of one, but the participation of many, with the contribution of many disciplines and the stories of many more. The *space-place* could not be designed from one artist to its public, all the ways conducted us to co-creation, participation, collaboration and togetherness. The broken threads of memory required connection.

The outcome of the project was unexpected: The local government changed politics of cultural management and war commemoration. Instead of commissioning an artist, the local offices set up what they called a “local digital curator team”. The strategy would include also the plans for the next commemoration plans for 2018 of WW2. The team would be in charge of facilitating encounters with communities of East Cheshire. Being There process

lead to the realisation that was needed to design was not the actual memorial but process and mechanism of encounter; performing the fold with response-ability.

## 6.4. The space-place of the *dps* practitioner

The roles of the designer and creative practitioner of *dps* are more about designing processes of participation than designing features of a place, a point of emplacement. The roles of the designers and artistic practices of the *digital public space(s)* are more about opening up spaces of possibilities and connections, and less about defining, dividing and re-enacting cuttings. That is a problematic role, especially in the culture of outcome-based research.

Ways to measure impact and value of participatory design research are based on parameters – number of attendees, volume, shape, length – have been shown to be insufficient. The projects I have discussed deal with subject matter that does not easily fit into the existing parameters; juxtapositions, temporalities, stories, encounters, interactions, possibilities, memories. I propose a *framework of emergence*, to think creative in method to approach *dps* practice in its own terms allowing for evaluations and consideration of findings in a *response-able* manner and according to a different set of parameters.

*Dps* is dependent upon the response of many players. It is not a site that can simply be visited, but rather a play *taking place* and *making space as is it played*. Understanding *space-place dynamic foldable (dis)continuum*, as generative force, as creative tension, offers an ethical vision, an invitation to think critically about design and creative processes. The *framework of emergence* considers practices of *digital public space(s)* not as routes to a pre-determined output, but as an act

of freedom conjugated in present continuous tense. It is not about measuring by a grid, but about performing the folds so the grid is reconfigure. It is about *intra-actions* with socio-technical *milieu* and is a constant in-formation of simultaneous (dis)continuity territories in the enactment of the divisions-encounters. *Dps* become in the enfolding and the potentialities still to be explored

The role of the *dps* designer and practitioner is no longer to design a site, or even the features of that site. It is to design a process through which catalytic encounters can happen, from which *digital public space(s)* will emerge.

If *spacetime mattering* is understood as present continuous active verb, then any datum or calculus is useless. How can spaces-places be measured, but with the stories, contradictions, instabilities and entanglements? How else than with the souvenir, the dust, the ice-cream pallet under the rug, or the match boxes treasuring forgotten magic tokens: a button, a stamp, a rock, a prayer.

## 6.5. It is all about memory

“Memory – the pattern of sedimented enfoldings of iterative intra-activity – is written into the fabric of the world. The world ‘holds’ the memory of all traces; or rather, the world is its memory (enfolded materialisation).” Karen Barad, 2010, p. 261

I want to ask you,

What is the very first memory of yourself?

What is the substance of that memory?

Do you remember the pallet of colours, the atmosphere, the fabric of that moment?

Are you remembering a moment, a space, a place?

Or the memory of that moment?

Or your memory of a memory -of a memory of a memory-?

How or where does that memory matter?

Are you remembering a moment? or your image reflected in the mirror? Or a memory of that moment printed in a photographic paper?

An external stimulus, a frozen moment that you somehow internalized?

Or is it the accumulation of all the moments when you recall it?

Each time leaving a little residue, keeping it alive? Layer after layer of dynamic memory dust.

Would you to tell me the story of that memory? what were you doing? with who? or with what?

Is your story changing a bit every time that you recall it? To whom did you tell that story before me? Where were you? Would you tell me your memory of remembering your memory?

An internal stimulus, accumulations of moments that you somehow externalized.

How is the matter, the substance of that story?

A photo? a mirror? a cup of tea? A moment of silence? A persisting drop? a song in the radio? The intuition of a kiss? the smell of the earth before the rain? the



noise that is hidden in things just before they break? Your fingers running through the pages of a book? Twelve thousands megabytes of memories stuck in your mobile? Ten gigabytes in your cloud? A dusty shoebox hidden under your bed? 342 posts in Instagram? 158 friends in Facebook? Yesterday's tweet which got retweeted. Twice. 9,272 songs in your Spotify? Well not all of them, but certainly that playlist that you love to play while cooking. And that other song that reminds you of last summer.

Dynamic memory traces accumulating in things, in apparatuses, in you, in me, *in-matter*. *(Dis)continuous* traces of memory travelling in and out of you at the same time as defining *what* is in and *what* is out and *who* are you. Enacting permeable frontiers between your body and memory machines (of discrete gears), mattering in the agential cut, accumulating, polarizing and attracting and repealing to make the fold, enfolding to *make space*, folding in-place.

Marking rhythm of time, creating a space within the loop and in between the "plissement". Part meaning, part tangible. Entanglements of matter and *in-matter*, human and nonhuman, theoretical and political, poetic, ethic.

I am in the middle of that space-rhythm, mine and yours, digital and tangible, which is not possible just to visit or to navigate, but that happens when we do things together, which is not there, it becomes through the encounter, and that I call *digital public space(s)*.

I propose to trouble, to complicate and to perform the differences with responsibility and pleasure to be transformed, me, my practice and the *digital public space(s)* by the responses. My practice proposes encountering the other and mapping patterns and differences rather than observation and data

collection. My interest is in what does not fit in the grid, what the datum cannot reflect, my interest is in diffracting theory and practice.

My encounters transformed me together with my idea of *digital public space(s)* in a journey of creative encounters.

## Inventory of words that matter n.6

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- *Response-ability*

[T]o respond, to be responsible, to take responsibility for that which we inherit (from the past and the future), for the entangled relationalities of inheritance that 'we' *are*, to acknowledge and be responsive to the noncontemporaneity of the present, to put oneself at risk, to risk oneself (which is never one or self), to open oneself up to indeterminacy in moving towards what is to- come. Responsibility is by necessity an asymmetrical relation/doing, an enactment, a matter of *différance*, of *intra-action*, in which no one/ no thing is given in advance or ever remains the same. Only in this ongoing responsibility to the entangled other, without dismissal (without 'enough already!'), is there the possibility of justice-to-come. (Barad, 2010, p. 256)

I am proposing a *framework of emergence* stuck in ethics, dependent upon the catalytic encounter, with the responses of one-others. Responses are the fabric of *space-place (dis)continuum*, where-when enacting the cut, performing the fold, questioning how differences are constituting here-there, then-after.

I am joining the sortilege of Haraways's neologism *response-ability* (1997, p.71). *Response-ability* to mean both responses and the responsibility for the responses. I propose the *framework of emergence* as responsive to an emergency of care and affection in research and creative practices. This framework is for making spaces and taking place, *performing the fold* and *enacting the cut* with *reponse-ability* as its methods and its ethical stand.

# Wave around and agitations

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## A mode of conclusions

*Digital public space(s)* are phenomena that manifest through an entanglement of agencies of very different natures; human and nonhuman, theoretical and political, poetic, ethic and aesthetic. I am talking about crossovers of academic interests, institutional dispositions, conceptual connections, imaginaries, creative practices and stuff – wires, screens, paper prototypes, lines of code, doodles in the corner of the page. Meaningful, like a song, a memory, a photograph, a warm friendly hand or mundane, like streets, shoes, pans, coins and toys. Such multiplicity is *intra-acting* in wave-ness across a historical landscape, the actual moment subjected to pass. In this thesis I am making sense and making real matters and *in-matters* of *digital public space(s)* through the *framework of emergence*.

My concerns have been on researchers affecting, even shaping what is researched. My concerns have been on tools of knowing constructing what is to be known; the agencies of the apparatus. I have proposed to trouble the borderline that cuts out the observer and what is observed. To this end my research in The Creative Exchange was a diffractive experiment to *cut-together-apart* an idea of *digital public space(s)* in different directions from within it. Mapping overlapping theories, practices and fictions as waves that help to realise and make real, matters and *in-matters* of *digital public space(s)* in the making.

With this practice I was aiming to be careful with the *response-ability* to be found in the confusion of boundaries and the pleasure of their (re)construction. I was

attentive to processes that allow for catalytic encounters rather than observation and data collection. My interest was in what the datum cannot reflect.

My encounters during this practice included playing, remembering and forgetting with people with dementia and their caregivers. Sitting in the same sofa with industry and academia to creatively exchange ideas. Catalyzing design of wearables as permeable membranes, informed by the stories of taxi drivers and hairdressers. Remembering the forgotten stories of the First World War, a virtual cup of tea, a map of broken hearts, the design of participative methods and the facilitation of conversations, that transformed me together with my idea of *digital public space(s)* in a journey of creative encounters.

I approached *dps* phenomena from *within*. As the journey advanced, I was every time more conscious that while researching, this research was shaping me. By the end this was crystal clear. My ideas about *dps* were mattering in swirls of practices of thinking, writing, making sense, making things and dreaming on projects together with people and things. The way I have presented this thesis, including its structure, was an effort to do justice to the process of *emergence* of phenomena, the thesis and myself together. This thesis, if it is something, is an encounter.

This thesis does not follow a hierarchical chain of thoughts that transfer *without loss* an argument from hypothesis through a series of linked categorical arguments to definitive conclusions, as end destination. Instead, it cares about the weakest link, about the losses. I wanted to come to the centre. I am here, and it is agitated. This thesis is the *re-turning* to the losses and presenting them as *offerings*, and most of all this is just a beginning.

The reiterations and contingences of diffraction provoke a rhythm of time, propose a space, part meaning, part tangible, that does not just describe *dps* but also performs my relationship with it: entanglements of matter and *in-matter*, encounters of philosophical thought and practices, objective and subjective evidence, dreams and project scopes in excel sheets, dynamic memory dust from which I build the *framework of emergence* as a model that is concerned with boundaries and their creative tensions, with *performing the fold and enacting the cuts*, including the tension between *dps*, my research, myself and now, you.

This project is far from being an experiment that tests the *framework of emergence*. I did not prototype a tool, test it in “real life”, collect evidence of its feasibility, nor am I now selling it to you with its limitations and potentialities as the answer to a research question. This is rather a story of my struggles to fit messy research in methodologies, to fit messy reality into a research, to fit messy encounters into a research question and to fit all that I learned into an academic thesis. This story shares in the emergency from which the framework emerged.

I am proposing to construct a *framework of emergence* based on philosophical positions that consider human and nonhuman, memory and time, interior and exterior, one and others, space and place, as co-constituting, through the same process. This has been appointed as *individuation* (Simondon 1989; 1992; 2005), *spacetime mattering* (Barad 2007), *differentiation*, *exteriorization* or *ontogenesis* (Stiegler 1994; 2009) – to name a few. I call this process of simultaneous co-constitution and differentiation the *encounter*. It is a *catalytic encounter*. This *framework of emergence* reconfigures a language through which *dps* practices

are *encountered* on their own terms, that I have been collecting in *inventories* at the end of each discussion.

*Diffraction* in this thesis is a thinking and a generative device for studying socio-technical *assemblages* with particular attention to the imaginaries and materialities that they join together. I am *cutting-together-apart dps* into *digital-physical* (Chapter Four), *public-private* (Chapter Five), *space-place* (Chapter Six), in *(dis)continuums of dynamic and foldable* nature (Interlude). My take on diffractive methodology, in essence, is assuming a position against the representationalist system. More than a delineation of a little piece of reality, more than data and its analysis, more than findings, maps, reflections or definitive conclusions, this thesis comes to matter by proposing reconfigurations of a system of thought and ways to weave language that relate with ontological considerations of reality that *dps* are enveloping. These ways leave room for allegory and non-coherence (Law 2004), for ambiguity and double sense, it is a language to tell rather than to demonstrate. It is attentive to intonation and vibrations, to the sonorous quality of the words that are pronounced, to my Latin accent and weird syntax, to repetitions and the play of spaces in between, to textures, smells and places that words bring with them.

I have discussed Barad's *diffraction* in conferences, research centres and with very patient mentors and friends. It received several criticisms, which I never dismissed. I now reply to them in turn, so I can share with you the summarised conversations. The first criticism is that Barad's *diffraction* leaves a sense of non-conclusion. After a sizeable epistemological jump, Barad does not draw any distinct conclusions in her work. This is because the very method of *diffraction*

implies that there cannot be conclusions drawn, because to do so would be to revert back to reflective modes of observation. Drawing conclusions would imply that one has a definite outline of a problem, which marks a line between the problem and oneself. I myself encounter the same problem in my task of writing these conclusions. My response has been to interrupt, challenge, agitate, previously drawn conclusions, to show that problems are in fact *part of us*, that we are part of them and that they continue to modify us. As such, the objective of my research will be not produce conclusions about *digital public space(s)*. I propose *agitations* instead.

The second criticism points out Barad's repetitive, unstructured and at times counterintuitive form of argument. One is accustomed to an argumentative order that forms a linear structure. While it was certainly difficult for me to confront and subvert this structure, using Barad's *diffraction*, I chose to follow her method precisely because reality is itself unstructured and counterintuitive. This is also a political commitment to making a space for other voices, poetic, erotic, pleasurable, to make a space for otherness in general. I intend to make a space for writing and poetics as methods for encountering knowledge that have been previously exiled because of their disagreement with tags and categories.

The last criticism of Barad is an over complication of terms that are difficult to apply in practice. My research is about two extremely novel ideas, the notion of Digital Public Space and the practice of Knowledge Exchange. I took the challenge the Creative Exchange proposed to study the complexity of *dps*. I think it is relevant to put a name of the phenomenon of digital coming to physical, to study as a domain of existence and to draft a way to approach it do creative



practice within at the same time that *dps* is alive, growing and transforming, continually being defined and negotiated.

I contribute to the *dps* idea by constantly thinking *in* methods. I really do not know if I put *diffraction* in practice, but I thought, read, wrote, dreamt and collaborated *diffractively*. More than a method to put in practice, I propose *diffraction* as a way to think *in* methods about *dps* practices. By diffracting *dps* I arrive to significances of what is digital, public and space, this contribution are useful to plan, scope and evaluate creative processes of researcher working within.

While finishing the correction of this thesis I am preparing my future research proposal. It is strange to be again constrained to funding applications that specifically disentangle practices from theory and from fictions, disciplines and methods, field work, etc. I see clearly my future work will involve policymaking, I want to explore ways in which a *framework of emergence* can inform policy, that is ultimately what determines what we researches can do or not to actually make a difference that matters.

It was not easy, it was a very scary project. I never knew when it was 'too much', for example the introduction of such a multiplicity of voices, some of which address you directly, without properly knowing you or who you are. With these artifices, I wanted to highlight that my project had many simultaneous levels and many voices. I was equally interested in remarking that the writing up is not an exact reflection of delimited knowledge that I somehow acquired by doing the research. I wanted to draw attention to the *discursive-material apparatus* of the process of writing a thesis; practices of neutralizing voices, objectifying

subjectivities, moderating passions and hiding doubts. I hope the reader was patient with the multiplicity of the writing style, which I am not proposing as *the* way, but as one way that worked for me. However, there were days and nights of fear and regrets. At times I was tempted to “fix” it and at others I was praying for the supervisors to let me leave it. If you are reading this as it is, it is because the supervisors believed in it.

# Bibliography

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- Abreu, M., Grinevich, V., Hughes, A., Kitson, M., Ternouth, P. (2008). 'Universities, Businesses and Knowledge Exchange'. Report for Council for Industry and Higher Education, and Centre for Business Research.
- Ahmed, S. (2006). *Queer phenomenology: Orientations, objects, others*. London and Durham: Duke University Press.
- Anzaldúa, G. (1987/1999). *Borderlands/La frontera: The new Mestiza*. San Francisco: Aunt Lute Books
- Araujo, A. (2007) 'Introduction: a pattern constellation' *Haeceity Papers*, 3 (1): Pattern , Sydney: University of Sydney Press.
- Bakardjieva, M (2005). *Internet Society: The Internet and Everyday Life*. London: Sage.
- Barad, K. (1998). "Getting Real: Technoscientific Practices and the Materialization of Reality". In: *Differences: A Journal of Feminist Cultural Studies*, Vol. 10, no. 2, p. 87-128
- (2001). 'Getting Real: Technoscientific Practices and Materialization of Reality'. At: <http://conceptsinsts.wikispaces.com/file/view/Barad+differences98.pdf> [Last accessed 20<sup>th</sup> May, 2013].
- (2003). 'Posthumanist performativity: Toward an understanding of how matter comes to matter'. *Signs*, 28(3), 801-831.
- (2007) *Meeting the Universe Half Way. Quantum physics and the entanglements of matter and meaning*. Durham & London: Duke University Press.
- (2010). "Quantum entanglements and hauntological relations of inheritance: Dis/continuities, spacetime enfoldings, and justice-to-come." *Derrida Today* 3, no. 2 240-268.
- (2012). 'On touching—The inhuman that therefore I am'. *Differences*, 23(3), p. 206-223.
- (2012b) 'Interview with Karen Barad' in *New Materialism: Interviews and Cartographies*. Van der Tuin, I. and R. Dolphijn (Edits.). University of Michigan Library: Mpublishing & Open Humanities Press

- (2014) 'Diffracting Diffraction: Cutting Together-Apart' in *Parallax*  
Vol. 20, Iss. 3. At:  
<http://www.tandfonline.com/doi/pdf/10.1080/13534645.2014.927623> [Last  
Accessed March 19th 2015]
- Barrett, E., & Bolt, B. (2013). *Carnal knowledge: towards a 'new materialism' through  
the arts*. London: Ib tauris.
- Barthélémy, J. (2012) 'Fifty Key Terms in the Works of Gilbert Simondon'. Arne De  
Boever (Trans.) in *Gilbert Simondon. Being and Technology* (p.203-233). De  
Boever, A., Murray, A., Roffe, J. and A. Woodward (Edit.). Edinburgh: Edinburgh  
University Press.
- Baym, N. (2000). *Tune In, Log On: Soaps, Fandom, and Online Community*. New York:  
Sage.
- Benedikt, M. (1991). 'Cyberspace: Some proposals' in *Cyberspace First Steps*. Benedikt,  
M. (Edits.). Cambridge and London: The MIT Press. p.119-224.
- Benjamin, W. (1982). *The Arcades Project*. Translated by Howard Eiland and Kevin  
McLaughlin. Cambridge: Harvard University Press.
- (2011). 'The work of art in the age of mechanical reproduction'. *Visual  
Culture: Experiences in Visual Culture*, 144-137.
- Bennet, J (2004). 'The Force of Things: Steps forwards an Ecology of Matter'. *Political  
Theory* 33, no. 3, 347-72.
- (2010). *Vibrant Matter. A political ecology of things*. Durham and London: Duke  
University Press
- Bergson, H. (1999). *An introduction to metaphysics*. New York: Liberal Arts Press
- Binder, T., & Brandt, E. (2008). The Design: Lab as platform in participatory design  
research. *Co-Design*, 4(2), 115-129.
- Braidotti, R. (2002). *Metamorphoses: Towards a materialist theory of becoming*.  
Cambridge: Polity Press
- (2013) *The Posthuman*. New York: John Wiley & Sons.
- Burnett, D, Gradinar, A, Porter, J, Stead, M, Coulton, P & Forrester, I 2015, 'Physical  
playlist: bringing back the mix-tape'. in J Abascal, S Barbosa, M Fetter, T Gross,  
P Palanque & M Winckler (eds), *Human-Computer Interaction – INTERACT*

2015 : 15th IFIP TC 13 International Conference, Bamberg, Germany, September 14-18, 2015, Proceedings, Part IV. Lecture Notes in Computer Science, vol. 9299, Springer, Cham, pp. 72-78, INTERACT 2015 The 15th IFIP International Conference on Human-Computer Interaction, Bamberg, Germany, 14-18 September., 10.1007/978-3-319-22723-8\_6

Burrows, R. (1997). 'Virtual culture, urban social polarization and social science fiction' in *The Governance of Cyberspace*. Loader, B. (Edits). London: Routledge. (p. 38-45)

Butler, J. (1990). 'Gender Trouble, Feminist Theory, and Psychoanalytic of Discourse'. In Nicholson, J. edit. *Feminism /Postmodernism*. New York and London: Routledge. 324-340 pp.

----- (1993). *Bodies that Matter*. London: Routledge.

Cabinet Office (2015). 'Local Open Data Champions: Open Data: Innovation at the local level. London: Cabinet Office. At:

<https://data.gov.uk/sites/default/files/Local%20Open%20Data%20Champion%20Case%20Studies.pdf> [Last Accessed 18<sup>th</sup> May 2016]

Calhoun, Craig. (1993) *Habermas and the Public Sphere*. Cambridge, Massachusetts: MIT Press.

Campbell, J. (2004). *Getting It On Online: Cyberspace, Gay Male Sexuality, and Embodied Identity*. Binghamton, NY: Harrington Park Press.

Castañeda, C. (2002). *Figurations: Child, bodies, worlds*. London & Durham: Duke University Press.

Castells, M. (1983). *The city and the grassroots: a cross-cultural theory of urban social movements* (No. 7). Chicago: University of California Press.

Ceder, S. (2015) 'Diffraction as a methodology for philosophy of education'. Paper presented at AERA conference Philosophy of education 2015 in Chicago. At: [http://s3.amazonaws.com/academia.edu.documents/37600823/Paper\\_AERA15.pdf?AWSAccessKeyId=AKIAJ56TQJRTWSMTNPEA&Expires=1468999105&Signature=MymiFmyi8iRavyAu%2Fsnr%2Bzy%2BNuc%3D&response-content-disposition=inline%3B%20filename%3DDiffraction\\_as\\_a\\_methodology\\_for\\_philoso.pdf](http://s3.amazonaws.com/academia.edu.documents/37600823/Paper_AERA15.pdf?AWSAccessKeyId=AKIAJ56TQJRTWSMTNPEA&Expires=1468999105&Signature=MymiFmyi8iRavyAu%2Fsnr%2Bzy%2BNuc%3D&response-content-disposition=inline%3B%20filename%3DDiffraction_as_a_methodology_for_philoso.pdf)

[Last Accessed March 19<sup>th</sup> 2016]

- (2016) Cutting Through Water Towards a Posthuman Theory of Educational Relationality. Doctoral dissertation, Lund University, Sweden. At: [https://www.academia.edu/23696265/Cutting\\_Through\\_Water\\_Towards\\_a\\_Posthuman\\_Theory\\_of\\_Educational\\_Relationality\\_Cutting\\_Through\\_Water](https://www.academia.edu/23696265/Cutting_Through_Water_Towards_a_Posthuman_Theory_of_Educational_Relationality_Cutting_Through_Water)  
[Last Accessed March 19th 2016]
- Connolly, W. E. (2013). 'The 'new materialism' and the fragility of things'. *Millennium-Journal of International Studies*, 41(3), 399-412.
- Coole, D. (2005). 'Rethinking agency: A phenomenological approach to embodiment and agentic capacities'. *Political Studies*, 53(1), 124-142.
- Crang, M. (2000). Public space, urban space and electronic space: would the real city please stand up?. *Urban Studies*, 37(2), 301-317.
- Cruickshank, L., Whitham, R., Morris, L. (2012) 'Innovation through the design of knowledge exchange and the design of knowledge exchange design'. *2012 International Design Management Research Conference Proceedings* 453-460
- Cruickshank, L. & Morris, L. (2014). 'New design processes for knowledge exchange tools for the New IDEAS project'. Paper presented at *The Creative Exchange Conference*, Lancaster, United Kingdom
- Data.gov.uk (2015). Data.gov.uk., pp.13-14. At: <http://data.gov.uk/search/everything/>  
[Last Accessed June 6th 2016]
- Debord, G. (2012). *Society of the Spectacle*. Edinburgh: Bread and Circuses Publishing.
- Deleuze, G. (1992). *Michel Foucault: Philosopher*. Minneapolis: University of Minnesota Press. (159-168).
- (2004). 'On Gilbert Simondon'. *Desert Islands and Other Texts, 1953-1974*, (p.86-89). At: <http://philpapers.org/rec/DELDIA-3> [Last accessed 26th September 2015]
- Deleuze, G. and C. Parnet (2002) *Dialogues II*. Trans. Hugh Tomlinson and Barbara Habberjam. New York: Columbia University Press.
- Dewey, J., & Rogers, M. L. (2012). *The public and its problems: An essay in political inquiry*. Philadelphia: Penn State Press.
- Dodge, M and R. Kitchin (2001). *Mapping cyberspace*. London and New York: Routledge.

- Dostal, R. (2006). 'Time and phenomenology in Husserl and Heidegger' in *The Cambridge Companion to Heidegger*. Charles Guignon's (edit). New York: Cambridge University Press.
- Elden, S. (2007). 'There is a politics of space because space is political'. *Radical philosophy review*, 10(2), 101-116.
- Fraser, N. (1990). 'Rethinking the public sphere: A contribution to the critique of actually existing democracy'. *Social text*, (25/26), 56-80.
- Friedberg, A. (2006). *The virtual window: from Alberti to Microsoft*. London: MIT.
- Foucault, M. (1977). *Discipline & Punish. The Birth of the Prison*. New York: Vintage Books.
- (1980). *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*. Ed. Colin Gordon. New York: Pantheon Books.
- (2002). *The Archaeology of Knowledge* translated by A.M. Sheridan Smith. London: Routledge.
- (2002b). *The Order of Things: An Archaeology of the Human Sciences*. London: Psychology Press.
- Foucault, M., & Miskowiec, J. (1986). 'Of other spaces'. In *Diacritics*, 16(1), 22-27.
- Frayling, C. (1993). 'Research in art and design'. London: Royal College of Art.  
At:[http://researchonline.rca.ac.uk/384/3/frayling\\_research\\_in\\_art\\_and\\_design\\_1993.pdf](http://researchonline.rca.ac.uk/384/3/frayling_research_in_art_and_design_1993.pdf) [Last accessed March 13th 2016]
- Frost, S. (2011). *The implications of the new materialisms for feminist epistemology*. Heidelberg: Springer.
- Gamman, L., & Thorpe, A. (2007). What is Socially Responsive Design? A Theory and Practice Review. In *Wonderground conference, Lisbon*. Available at <http://www.designagainstcrime.com/index.php>.
- Garnham, N. (1995). The media and the public sphere. *The Information Society Reader*, 357-365.
- Gere, C. (2002). *Digital Culture*. London: Reaktion Books.
- Gibson, W. (1991). 'The academic reader' in *Cyberspace First Steps*. Benedikt, M. (Edits.). Cambridge and London: The MIT Press. P.27-9.

- Gilloch, G. (2013). *Walter Benjamin: Critical Constellations*. New York: John Wiley & Sons.
- Gradinar, AI, Huck, J, Coulton, P & Salinas, L 2016, 'Beyond the blandscape: utilizing aesthetics in digital cartography'. in CHI EA '16 Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems. ACM, New York, pp. 1383-1388, CHI 2016, San Jose, United States, 7-12 May., 10.1145/2851581.2892317
- Graham, S. (1998). 'The end of geography or the explosion of place? Conceptualizing space, place and information technology'. *Progress in human geography*, 22(2), 165-185.
- Grosz, E. A. (1994). *Volatile bodies: Toward a corporeal feminism*. Bloomington: Indiana University Press.
- ( 2012) 'Identity and Individuation: Some Feminist Reflexions' . Arne De Boever (Trans.) in *Gilbert Simondon. Being and Technology* (p.37-56). De Boever, A., Murray, A., Roffe, J. and A. Woodward (Edit.). Edinburgh: Edinburgh University Press.
- Habermas, J. (1991). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society*. Massachusetts: MIT press.
- Hall, S. (2006). 'Foucault: Power, Knowledge and Discourse'. In *Discourse Theory and Practice. A Reader*. Wethrell, M., S. Taylor and S. Yates (Eds). London: Sage Publications.
- Handforth, R., & Taylor, C. A. (2016). Doing academic writing differently: a feminist bricolage. *Gender and Education*, 1-17.
- Hannay, A. (2005). *On the public*. London: Psychology Press.
- Haraway, D. (1990). 'A manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s' in *Feminism/Postmodernism* Edited by Linda J. Nicholson. New York and London: Routledge.
- (1997). *Modest\_Witness @Second\_Millennium.FemaleMan\_ Meets\_Onco Mouse: Feminism and Technoscience*. NewYork: Routledge.
- (2008). *When Species Meet*. Minneapolis: University of Minnesota.
- Harding, S. G.(1991). *Whose science? Whose knowledge?: Thinking from women's lives*. Ithaca: Cornell University Press.



- Harvey, D. (2006). The political economy of public space. *The politics of public space*, 17, 34.
- Hayles, N. K. (2008). *How we became posthuman: Virtual bodies in cybernetics, literature, and informatics*. University of Chicago Press.
- (2004). 'Metaphoric networks in lexia to perplexia'. *First Person: New Media as Story, Performance, and Game*, 291-301. At: <http://www.arcadetheory.org/wp-content/uploads/2014/03/2005hayles.pdf> [Last accessed 17<sup>th</sup> March, 2015]
- Hement, D., Thompson, C., de Vicente, J. L., & Cooper, R. (2013). *Digital public spaces*. FutureEverything. At: <http://futureeverything.org/wp-content/uploads/2014/03/DPS.pdf> [Last accessed March 15<sup>th</sup> 2015]
- Hickey-Moody, A., Palmer, H., & Sayers, E. (2016). Diffractive pedagogies: dancing across new materialist imaginaries. *Gender and Education*, 28(2), 213-229.
- Honan, E., & Bright, D. (2016). Writing a thesis differently. *International Journal of Qualitative Studies in Education*, 29(5), 731-743.
- Husserl, E (1991). On the phenomenology of the consciousness of internal time (1893-1917). John Barnett Brough (Trans.). London: Kluwer Academic Publishers.
- Huizinga, J. (1980). *Homo Ludens. A study of the play-element in Culture*. London, Boston and Henley: Routledge & Kegan Paul.
- Ihde, D. (2002). *Bodies in technology* (Electronic Mediations Vol. 5). Minneapolis & London: University of Minnesota Press.
- Iveson, K. (2003). 'Justifying exclusion: the politics of public space and the dispute over access to McIvers ladies' baths, Sydney'. *Gender, Place and Culture: A Journal of Feminist Geography*, 10(3), 215-228.
- Iverson, K., McCoy, M. R., Mun, H. S., McAtee, M., Mazzei, R., Seil, O. D., ... & Van Harlingen, B. L. (2013). *U.S. Patent Application No. 13/657,695*.
- Jackson, A. Y. (2013). Posthumanist data analysis of mangling practices. *International Journal of Qualitative Studies in Education*, 26(6), 741-748.
- Jacobs, N. (2013) 'Measuring Knowledge Exchange'. *The Knowledge Exchange, An Interactive Conference Proceedings*. The Creative Exchange. Lancaster University.

- Jenkins, H. (2006). *Fans, Bloggers, and Gamers: Exploring Participatory Culture*. New York: New York University Press.
- Kaiser, Birgit Mara, and Kathrin Thiele. "Diffraction: Onto-epistemology, quantum physics and the critical humanities." *Parallax* 20, no. 3 (2014): 165-167.
- Kaiser, B. M. (2014). Worlding CompLit: Diffractive Reading with Barad, Glissant and Nancy. *Parallax*, 20(3), 274-287.
- Keller, E. F. (1995). *Reflections on Gender and Science*. New Haven & London: Yale University Press.
- Kirby, V. (2011). *Quantum anthropologies: Life at large*. Duke University Press.
- (2014). *Telling flesh: The substance of the corporeal*. Routledge.
- Kilian, T. (1997). *Public and private, power and space*. Maryland: Rowman & Littlefield.
- Kensing, F., & Blomberg, J. (1998). Participatory design: Issues and concerns. *Computer Supported Cooperative Work (CSCW)*, 7(3-4), 167-185.
- Kitchin, R. (1998). 'Out of Place, Knowing One's Place: Space, power and the exclusion of disabled people'. *Disability & Society*, 13(3), 343-356.
- (2000). *Cybespace*. New York: John Wiley & Sons.
- Kitchin, R., & Dodge, M. (2011). *Code/space: Software and everyday life*. Massachusetts: MIT Press.
- Kohn, M. (2004). *Brave new neighborhoods: The privatization of public space*. London: Psychology Press.
- Langhout, R. D. (2016), This is Not a History Lesson; This is Agitation: A Call for a Methodology of Diffraction in US-Based Community Psychology. *Am J Community Psychol*. doi:10.1002/ajcp.120393
- Latour, B. (1983). 'Give me a Laboratory and I Will Raise the World' in *The Science Studies Reader*, ed. Mario Biagioli,. New York: Routledge.
- (1993). *We Never Been Modern*. Cambridge: Harvard University Press.
- Lather, P., & St. Pierre, E. A. (2013). Post-qualitative research. *International Journal of Qualitative Studies in Education*, 26, 629-633.  
doi:10.1080/09518398.2013.788752

- Law, J. (2003), 'Making a Mess with Method', published by the Centre for Science Studies, Lancaster University, Lancaster LA1 4YN, UK. At: <http://www.comp.lancs.ac.uk/sociology/papers/Law-Making-a-Mess-with-Method.pdf>. [Last accessed March 13th, 2016]
- (2004), *Aftermethod: The mess in Social Science Research*. London: Routledge.
- Lefebvre, H. (1991). *The production of space* (Vol. 142). Oxford: Blackwell
- (2004), *Rhythmanalysis. Space, time and everyday life*. Stuart Elden and Gerald Moore (Trans.). London: Continuum International Publishing Group.
- Levy, G., Halse, C., & Wright, J. (2015). Down the methodological rabbit hole: thinking diffractively with resistant data. *Qualitative Research*, 1468794115571434.
- Lévy, P. (1998). *Becoming Virtual: Reality in the Digital Age*. New York: Plenum Trade.
- Liestøl, G., Morrison A and Rasmussen, T. (2004) *Digital Media Revisited: Theoretical and Conceptual Innovations in Digital Domains*. Cambridge, MA: MIT Press.
- Loader B. (1997). 'The governance of cyberspace: politics, technology and global restructuring' in *The Governance of Cyberspace*. Loader, B. (Edits). London: Routledge. (p. 1-22)
- Lockett, N., Kerr, R., Robinson, S. (2008) 'Multiple Perspectives on the Challenges for Knowledge Transfer between Higher Education Institutions and Industry'. *International Small Business Journal*, 26:6 661-681
- Longino, H. E. (1990). *Science as social knowledge: Values and objectivity in scientific inquiry*. Princeton: Princeton University Press.
- Low, S., & Smith, N. (Eds.). (2013). *The politics of public space*. London: Routledge.
- Lury, C., & Wakeford, N. (Eds.). (2012). *Inventive methods: The happening of the social*. Routledge.
- Mackenzie, A. (2002) *Transductions. Bodies and Machines at Speed*. London: Continuum.
- MacLure, M. (2013). Researching without representation? Language and materiality in post-qualitative methodology. *International Journal of Qualitative Studies in Education*, 26(6), 658-667.
- Mazzei, L. A. (2014). Beyond an Easy Sense A Diffractive Analysis. *Qualitative Inquiry*, 1077800414530257.

- Mitchell, D. (1995). The end of public space? People's Park, definitions of the public, and democracy. *Annals of the association of american geographers*, 85(1), 108-133.
- (2003). *The right to the city: Social justice and the fight for public space*. New York: Guilford Press.
- Mol, A. (2002) *The body multiple: Ontology in medical practice*. Duke University Press.
- Munster, A. (2006). *Materializing New Media: Embodiment in Information Aesthetics*. Lebanon, NH: UPNE (University Press of New England).
- Nicolini, D., & Roe, B. (2014). Surfacing the multiple. *Reconceptualising Professional Learning: Sociomaterial Knowledges, Practices and Responsibilities*, 67.
- Nissen, S. (2008). 'Urban transformation from public and private space to spaces of hybrid character'. *Sociologický časopis/Czech Sociological Review*, 44(06), 1129-1149.
- Novak, M. (1991). 'Liquid Architectures in Cyberspace' in *Cyberspace First Steps*. Benedikt, M. (Edits.). Cambridge and London: The MIT Press. P.225-54.
- Page, H., & Thomas, R. B. (1994). White public space and the construction of white privilege in US health care: fresh concepts and a new model of analysis. *Medical Anthropology Quarterly*, 8(1), 109-116.
- Parikka, J. (2012). New materialism as media theory: Medianatures and dirty matter. *Communication and Critical/Cultural Studies*, 9(1), 95-100.
- (2009). 'Apparatus theory of media á la (or in the wake of) Karen Barad' at *Machinology. Machines, noise, and some media archeology*. At: <https://jussiparikka.net/category/barad/> [Last accessed 17<sup>th</sup> March, 2015]
- Rollason, C. (2002) 'The Passageways of Paris: Walter Benjamin's Arcades Project and Contemporary Cultural Debate in the West'. *Modern Criticism* (p.262-296). At: <http://www.wbenjamin.org/passageways.html>. [Last accessed July 19<sup>th</sup> 2014]
- Ruppel, S., Dege, M., Andrews, M. and Squire, C. (2008) 'Tackling problems of qualitative social research: a conversation' *Forum: Qualitative Social Research* At: [www.qualitative-research.net/fqs-texte/1-08/08-1-41-e.htm](http://www.qualitative-research.net/fqs-texte/1-08/08-1-41-e.htm) [Last accessed March 9<sup>th</sup> 2015]
- Salinas, L., Coulton, P., & Dunn, N. (2015). 'Using game design as a frame for evaluating experiences in hybrid digital/physical spaces'. *Architecture and Culture*. Volume 4, Issue 1. At:

<http://www.tandfonline.com/doi/ref/10.1080/20507828.2015.1094227> [Last accessed 12<sup>th</sup> April 2016]

- Sanders, E. and Stappers, P. Co-creation and the new landscapes of design. *CoDesign: International Journal of CoCreation in Design and the Arts*, 4:1, 2008, 5-18.
- Sauvagnargues, A. ( 2012) 'Crystal and Membranes: Individuation and Temporality'. Jon Roffe (Trans.) in *Gilbert Simondon. Being and Technology* (p.57-60). De Boever, A., Murray, A., Roffe, J. and A. Woodward (Edit.). Edinburgh: Edinburgh University Press.
- Savas, E. S., & Savas, E. S. (2000). *Privatization and public-private partnerships* (p. 31). New York: Chatham House.
- Schuman L, (2012) 'Configurations' in Lury, C., & Wakeford, N. (Eds.) *Inventive methods: The happening of the social*. London: Routledge.
- Sehgal, M. (2014). Diffractive Propositions: Reading Alfred North Whitehead with Donna Haraway and Karen Barad. *parallax*, 20(3), 188-201.
- Shaviro, S. (2006) 'Simondon on Individuation'. *The Pinocchio Theory*. At: <http://www.shaviro.com/Blog/?p=471> [Last accessed March 8<sup>th</sup> 2016]
- Shields, R. (2003). *The Virtual*. New York: Routledge.
- (2006). 'Virtualities'. *Theory, Culture & Society*, 23(2-3), 284-286. At <http://tcs.sagepub.com/content/23/2-3/284.short> [Last Accessed March 16<sup>th</sup> 2013.]
- Simondon, A. (1989) *L'individuation psychique et collective: à la lumière des notions de forme, information, potentiel et métastabilité*. Paris: Aubier
- (1992) 'The genesis of the individual' in *Incorporations* by Crary, J., and Kwinter, Sanford (Zone Series 6). New York: Zone.
- (1995) 'L'individu et sa genèse physic-biologique'. Grenoble: Millon
- (2005) *L'Individuation à la lumière des notions de forme et d'information*. Paris: Millon.
- ( 2012) 'Technical Mentality'. Arne De Boever (Trans.) in *Gilbert Simondon. Being and Technology* (p.1-15). De Boever, A., Murray, A., Roffe, J. and A. Woodward (Edit.). Edinburgh: Edinburgh University Press.
- Simonsen, Jesper, and Toni Robertson, eds. *Routledge international handbook of participatory design*. Routledge, 2012.

- Stiegler, B. (1994) *Technics and Time, 1. The Fault of Epimetheus*. Richard Beardsworth and George Collins (Trans.). Stanford, California: Stanford University Press.
- (2003) 'Our Ailing Educational Institutions' *Culture Machine*, Vol. 5. At: <http://www.culturemachine.net/index.php/cm/article/viewarticle/258/243> [Last Accessed 14<sup>th</sup> October 2013].
- (2009) *Technics and Time, 2. Disorientation*. Stephen Barker (Trans.). Stanford, California: Stanford University Press.
- (2009b) 'The Carnival of the New Screen: From hegemony to isonomy'. At: [http://forskning.blogg.kb.se/files/2012/09/YouTube\\_Reader.pdf#page=21](http://forskning.blogg.kb.se/files/2012/09/YouTube_Reader.pdf#page=21) [Last Accessed 14<sup>th</sup> October 2013].
- (2011) *Technics and Time, 3. Cinematic Time and the Question of Malaise*. Stephen Barker (Trans.). Stanford, California: Stanford University Press.
- (2012) 'The Theater of Individuation: Phase-Shift and Resolution in Simondon and Heidegger. Kristina Lebedeva (Trans.) in *Gilbert Simondon. Being and Technology* (p.185-202). De Boever, A., Murray, A., Roffe, J. and A. Woodward (Edit.). Edinburgh: Edinburgh University Press.
- Stanford Encyclopedia of Philosophy Walter Benjamin First published Tue Jan 18, 2011 <http://plato.stanford.edu/entries/benjamin/> [Last Accessed on July 19<sup>th</sup> 2014]
- Taguchi, H. L. (2012). A diffractive and Deleuzian approach to analysing interview data. *Feminist Theory*, 13(3), 265-281.
- Tassoul, M., & Buijs, J. (2007). Clustering: An essential step from diverging to converging. *Creativity and Innovation Management*, 16(1), 16-26.3
- Taylor, C. A. (2016). Close Encounters of a Critical Kind A Diffractive Musing In/Between New Material Feminism and Object-Oriented Ontology. *Cultural Studies↔ Critical Methodologies*, 16(2), 201-212.
- Taylor, A., Blaise, M., & Giugni, M. (2013). Haraway's 'bag lady story-telling': Relocating childhood and learning within a 'post-human landscape'. *Discourse: Studies in the Cultural Politics of Education*, 34(1), 48-62.
- Thiele, K. (2014). Ethos of diffraction: New paradigms for a (Post) humanist ethics. *Parallax*, 20(3), 202-216.
- Tuck, E. (2006). Suspending damage: A letter to communities. *Harvard Educational Review*, 79, 409-427.

- Valéry, P. (1960) 'L'Idée fixe' [1931], in Paul Valéry, *Œuvres II*. Paris: Gallimard,
- Van der Tuin, I., and Dolphijn R. (2010) 'The transversality of new materialism.' *Women: a cultural review* 21.2 153-171.
- (2012). *New materialism: Interviews & cartographies*.  
Utrecht: Open Humanities Press.
- (2014). Diffraction as a methodology for feminist onto-epistemology: On encountering Chantal Chawaf and posthuman interpellation. *Parallax*, 20, 231–244.
- Van Doorn, N. (2011). 'Digital spaces, material traces: How matter comes to matter in online performances of gender, sexuality and embodiment'. *Media, Culture & Society* 33.4, 531-547. At:  
<http://mcs.sagepub.com/cgi/doi/10.1177/0163443711398692> [Last Accessed June 13<sup>th</sup>, 2013].
- Watts, L. (2007) *A future archaeology of the mobile telecoms industry*. Lancaster University. Theses. Sociology.