Plan of work 2015
Spectral affect, a dialogic study of rhythms in sites.
Alejandra Pérez Nuñez.

- ▪ Statement of the problem/hypothesis to be investigated*

There are hidden influences in sites that are not available to the bare senses. These influences may be detected and represented in the hertzian dimension of frequencies.

My hypothesis proposes that hidden aspects of sites, constituted by sound, influence of semiotic layers (e.g. advertising images) and other invisible frequencies can be made available through media art research practices using free open source technologies, that describe and represent particular rhythmic assemblages of site as both a poetic and critical encounter. When we say 'site' for the purpose of this study we take into consideration different dimensions of the concept and part of the research will seek to establish a dialogue between a material perspective on landscape based on the detection of frequencies (pursued through practice) and a sense of site, as proposed by Lippard (1997)[1], as mediated by memory and the subjective apprehension of space. This approach requires the development of a methodological framework to find interfaces between what might be termed "diagrams of significance" and electromagnetic ecologies of infrasound, ultrasound, microwaves and so on. A diagram of significance will be understood as a dynamic arrangement of sensorial and enunciative dimensions, it is derived from the work of Felix Guattari in relation to mapping significations and signs[2], a form of diagrammatic thinking and theorizing that in relation to this research will work with practice-based research to map invisible forces operative in sites (i.g. hertzian frequencies, quanta and energy ebbs and flows).

The research to be developed is thus also a poetic study of the interface as an object of study of media culture considered as a live performative agency embedded in the production of everyday life. The concept of the interface as an artifact of media culture is described by Matthew Fuller as an associational structure, dynamic, performative, "distributed throughout and indivisible from the system is part of"[3]. "A working definition is provided by Brenda Laurel, "An interface is a contact surface. It reflects the physical properties of the interactors, the functions to be performed and the balance of power and control."[4]

Concepts of site from sociology are also pertinent to the study. For example, Henri Lefebvre notes that rhythm is a tool of analysis[5], taking the concept of rhythmanalysis from Bachelard and the writer Lucio Alberto Pinheiro dos Santos[6] he defines it as a framework for analysis of the

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[1] As Lucy Lippard (1997) in The lure of the local notes, "I use space here as a physical sometimes experiential component. If space is where culture is lived, then place is the result of their union" p. 9-10. If landscape is a way of seeing, there are potentially as many landscapes as individual ways of seeing- although some people seem threatened by this degree of multiplicity. Otherness and familiarity are reinforced by impressions of landscape. Backgrounds inevitably affect foregrounds. p.61

[2] In Rittornellos and existencial affects (1996) Guattari describes the sign as a function between different types of functions, denotative, diagrammatic, sensorial affect and problematic affect. He emphasizes that language does not arise from autonomous axiomatization, referring to the work of Hjelmslev "(…) it is along this scope formed by the concatenations of partial enunciative territories that there occurs a generalized flight of the systems of expression towards the social, the pre-personal, the ethical and the aesthetical"(in Guattari Reader. p.163)

[3] The impossibility of interface in Behind the Blip ().p.99"Performing a surface, manufacturing an alienated interface, double consciousness is an essential capacity of life in the "mode of information""p.107

[4] Brenda Laurel, ed. The art of human computer interface design. Reading, MA. Addison Wesley, 1990)p xiii in the impossibility of interface. p.99

[5] "Everywhere where there is rhythm there is measure, which is to say law, calculated and expected obligation, a project" (2004) Rhythmanalysis. Space, time and everyday life. p.7

[6] Although Lefebvre notes that the concept is incompletely defined by these authors and is"emerging bit by bit from the shadows" p.9

particular and provides different categories for measuring and essentially comparing spaces where rhythms are occurring[7] and developing a critique of capitalism and its alienating effects in the everyday.[8] Following his writings this investigation is focused in the understanding of the invisible in interaction with the visible in a playground where these forces unfold. When speaking of the impact of technology Lefebvre asserts that technological conquest "does not make the everyday more alive (and) it nourishes ideology"[9]. Similarly but from a design perspective Anthony Dunne in *Hertzian tales* (1990) reflects upon the impact of the invisible in daily life, arguing that to be interested in electromagnetic phenomena is to remain centered in the hidden life of objects. He conceptualises 'radiogenic objects" as things that "function as emitting interfaces between the abstract space of electromagnetism and the material cultures of everyday life"[10] Dunne's idea reveals that the objects of everyday use are connected to the abstract space of frequencies and this is a characteristic of consumer cultures which converge in everyday life. Our interest is then on spaces that characterize consumer culture of goods and transactions and the comparison with the other, deserted, isolated, peripheral site by depicting formations that otherwise may not be available if not through the augmentation of the senses. This formations may be studied in a common ground that has been named as the hertzian space[11] of frequencies, coming from the unit hertz, or cycles per second, as used in the physics of sound. Studying electromagnetic or hertzian space is a way to unveil the life of objects, thus it is about finding a focus on the material and the culture derived from electromagnetic objects.

The research will be developed throughout in such a way as to give relevance to rhythm and the dialectics between sites and the hertzian formations that populate them. Rhythm, according to Lefebvre is a "fleeting object, which is not exactly an object" and demands from the researcher to be situated "simultaneously inside and outside"[12] To be taken by rhythm and be able to describe it - be it ultrasound, infrasound, infrared or words, rhythms can be identified in the repetitious occurrences that produce spaces. Rhythmanalysis thus arises from everyday life and in the frame of this study might be seen as springing out of the accretion of materialities and from the interactions of different types of frequencies. Furthermore rhythm is a useful conceptual tool to explore invisible aspects of sites in parallel with practice-based research.

- ▪ Works in progress

Semiotic energies is a work started in Madrid in November 2014 that searches for the influence of the unsaid in urban spaces. The project involves a collection of signs (data acquisition of image and text in sites) to which is applied a frequency analysis of the sign's cognitive framing[13] derived from linguistic methodology and applied statistics techniques. It draws a direct reference to the work of cognitive linguist George Lakoff and to computational linguistics such as concordance

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7 "Rhythms escape logic and nevertheless contain a logic, a possible calculus of numbers and numerical relations"p.11 "Everywhere where there is interaction between a place, a time and an expenditure of energy there is a rhythm. Therefore: a) repetition (of movements, gestures, action, situations, differences" b) Interferences of linear processes and cyclical processes. C) birth, growth, peak, then decline and end" p.16 Polyrhythmia, eurhythmia and arrhythmia" p.16

8 (1984) Everyday life in the modern world.

9 Henri Lefebvre (2004) Rhythmanalysis. Space, time and everyday life. p.54

10 Dunne (1990) p.88

11 Hertzian space has been defined by Anthony Dunne as "the architecture of the physical interactivity between a device and a person" Dunne, Anthony. Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design MIT Press. March 2001. Pg 21.

12 Rhythmanalysis. Space, time and everyday life (2004) p.27

13 Cognitive framing refers to a conceptual structure related with thinking. It is used in cognitive science to investigate the evoked words related to words or the narrative frames and conceptual metaphors that define words and thoughts. The framing specialist is Geoge Lakoff. His more reknown book is Don't think of an elephant! Know your values and frame the debate (2004) and has been used in political science.

programs and latent semantic analysis.

One geographical zone was studied, Callao, Calle Preciados and Plaza El Sol, an area characterized by the high affluence of people and a prominent amount of consumer signage. The work was developed collaboratively with 10 practitioners, artists, linguists, philologists and designers that helped to capture approximately 600 images for posterior analysis.Words were extracted and cognitive frames were gathered with the help of external evaluators, mainly students, who wrote related words using an online web form. After word collection (data acquisition), two types of analysis were performed, frequency analysis, concurrent word analysis and clustering using a FOSS implementation of Latent Semantic Analysis. This work can be seen as a methodological model that seeks to engage with and reveal rhythmic formations of capitalism in sites.

Localizacion	Foto	Title	Transcripción	Marco Cognitivo Evaluador
Latitude: 40.417342000000 Longitude: -3.704355000000		07-CARTEL-EL-CORTE-INGLES.jpg	El Corte inglés. Atrévete, Estrena	dinero, exclusividad, elegancia, inaccesibilidad, marca, inalcanzable, ideal, modélico, invierno, moda, tendencias
Latitude: 40.417019000000 Longitude: -3.703378000000		14-CARTEL-ENVIA-DINERO.jpg	Envía y recibe dinero en minutos más de 200 países	Inmigración, globalización, consumismo, capitalismo, primer mundo, privilegios,
Latitude: 40.417121000000 Longitude: -3.703246000000		14-CARTELERIA.jpg	Dos Tontos Todavia más tontos	película, humor, vulgar, americanos, grosero, remake

Figure 1 *Semiotic Energies* (2014) The photographs and images were collected on a website for posterior analysis http://192.185.155.234/~puebli/semantica/drupal-7.33/?q=tracker[14]
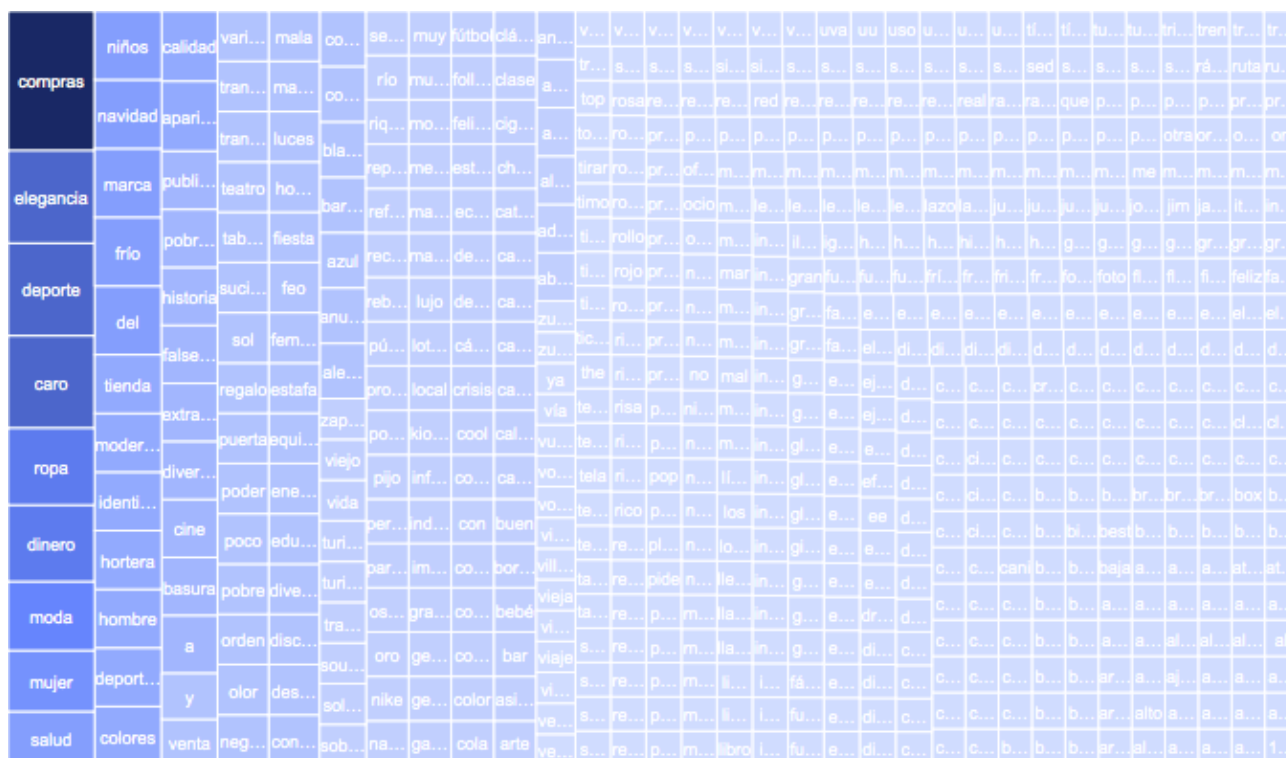
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[14] Accessed in January 2015

Figure 2 Tree map visualization of the frequency analysis performed over cognitive frames of the signs found in Plaza del Sol in Madrid. *Energias Semioticas* (2014)

Cartografia Sonora Antartica is on-going research on imperceptible environmental conditions in Antarctica consisting of the performativity of the artist to cover remote landscape. The aim was to record low frequencies in water with a hydrophone as well as to record samples of very low frequencies transduced from the ionosphere with a modified amplifier. This work deploys methods of experimental fieldwork towards describing the additional hertzian dimensions of remote sites.

Figure 3 Artist researcher performing Very Low Frequency (VLF) detection in Greenwich island, Shetland del Sur. 62°28′54″S 59°37′49″O in the north coast of caletón Iquique of bahía Chile (or Discovery bay) (*Cartografía Sonora Antartica* Initiated in 2009)

UKIKA 2014, 2015. Collaborative study of landscape in Navarino island. Curated by the artist researcher, included collaborations with performers, community and new media researchers. It consists of a study of the sub-Antarctic landscape identifying its main features and the means to depict its invisible presence through detection of ultra violent radiation, light, temperature, decibels and the exploration of artificial elements in interaction with natural ecosystems.

Escritura Colaborativa is a methodology for collective writing workshops assessed by procedures, algorithms, code and routines. Performed in Santiago de Chile from 2012-2014 with students of the faculty of Physical Sciences and mathematics, the work develops collective techniques of cut-up and assemblage following rules as well as routes in a geographical space to undertake the collection of signs.

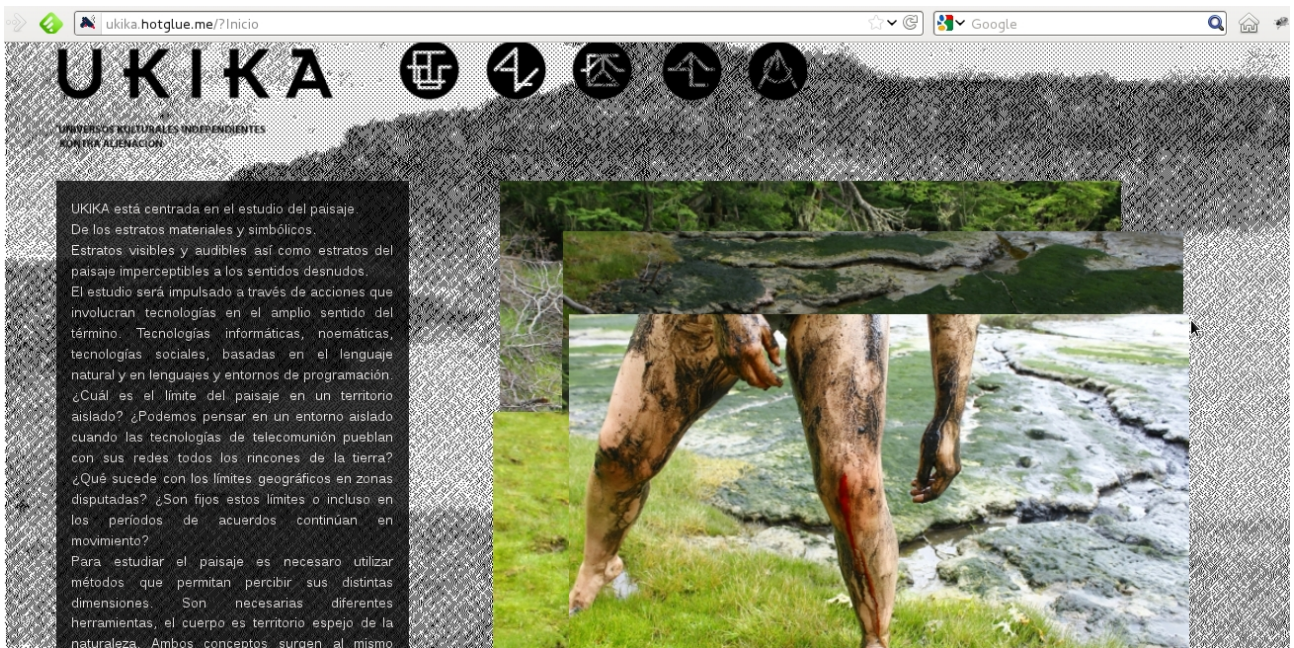Figure 4 Ukika website http://ukika.hotglue.me In the picture artist Macarena Perich performing body measurements in one of Puerto Williams peat bogs (turbal) (2013)
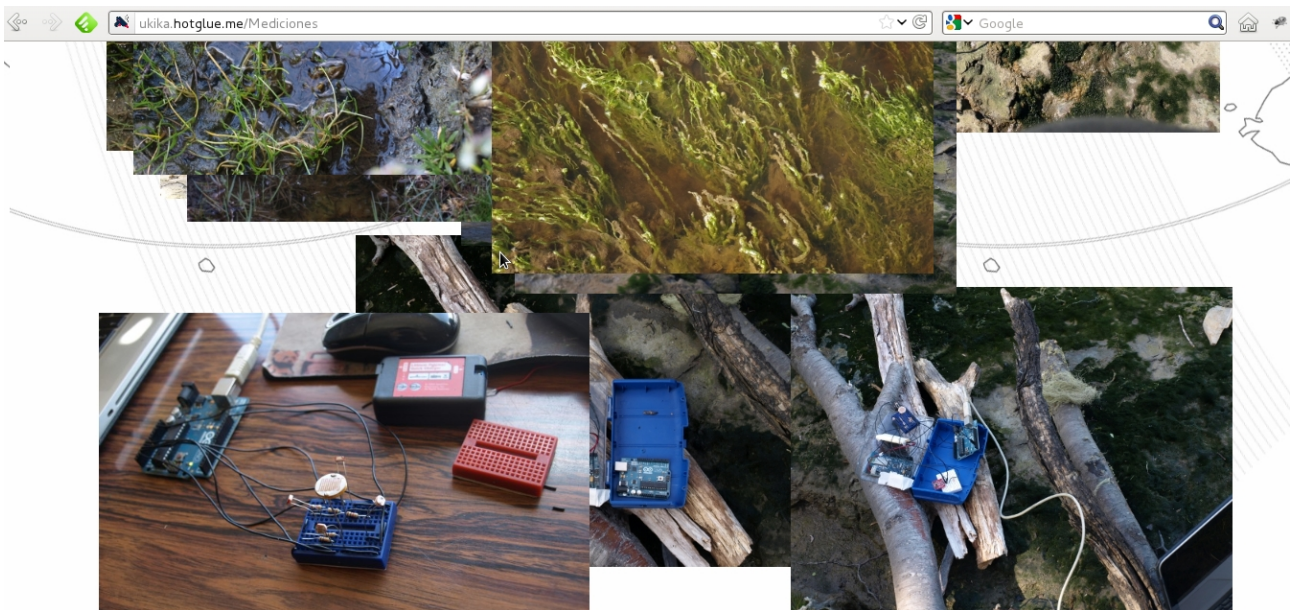
Figure 5 Light and temperature measurements in one of Puerto Williams peat bogs (turbal). Performed in collaboration with Mirko Petrovich (2013)

Figure 6 Ukika, Temperature measurements in one of PuertoWilliams peat bogs (turbal). Performed in collaboration with Mirko Petrovich (2013)
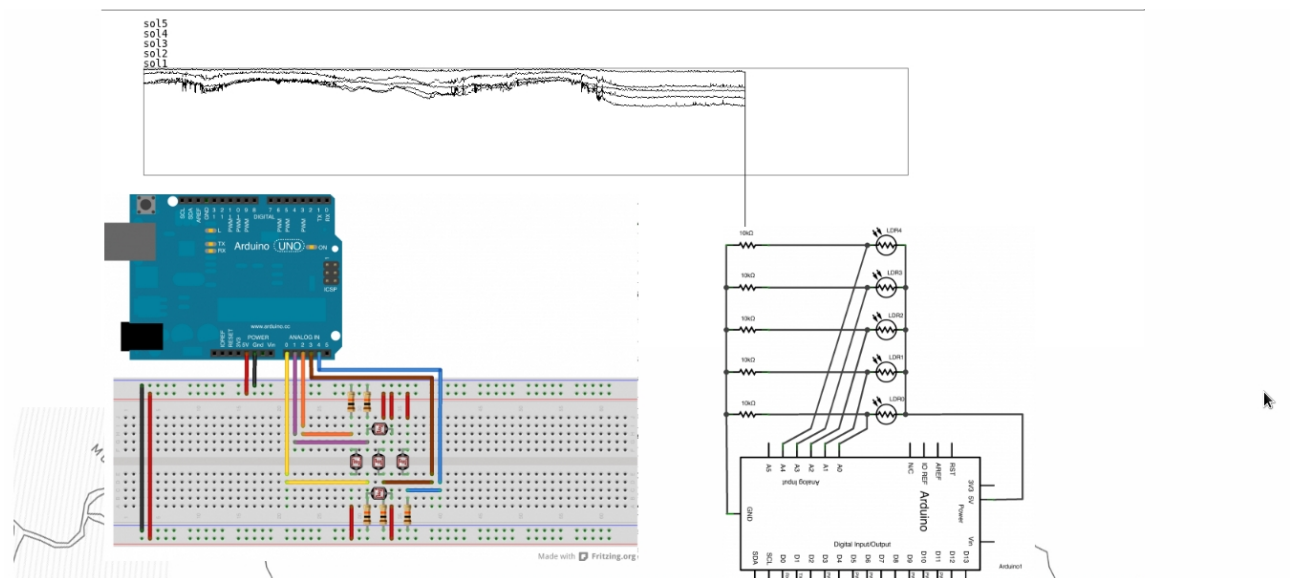
Figure 7 Ukika, Arduino scheme and graph of ligth measurements in one of PuertoWilliams peat bogs (turbal). Performed in collaboration with Mirko Petrovich (2013)

Figure 8 Ukika. Found garbage lot in the forest of Puerto Williams. Navarino island (2015)

Figure 9 Ukika. Performing Very Low Frequency detection using found antenna in garbage lot in Puerto Williams (2015)

Figure 10 Ukika. Performing ultraviolet, temperature and light detection in Pali Aike (2015)

Figure 12 Ukika. Artist researcher performing ultraviolet, temperature and light detection in Pali Aike (2015)

Figure 13 *Ukika*. Lichen in Pali Aike (2015) Future fieldwork should take into consideration ways to detect the presence of lifeforms like lichens, perhaps measuring bio electric potential.

Figure 14 Ukika. Equipment used for detecting ultraviolet, light and temperature detection. Made by artist engineer Martin Hug (2015)

Figure 15 Ukika. Performing ultraviolet, temperature and light detection in Pali Aike (2015) The topography and biodiversity of subantartic ecosystems makes fieldwork rich and expandable. In future fieldwork different sensors should be added like a ultrasonic microphone to detect the presence of woodswallows and bats.

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DB
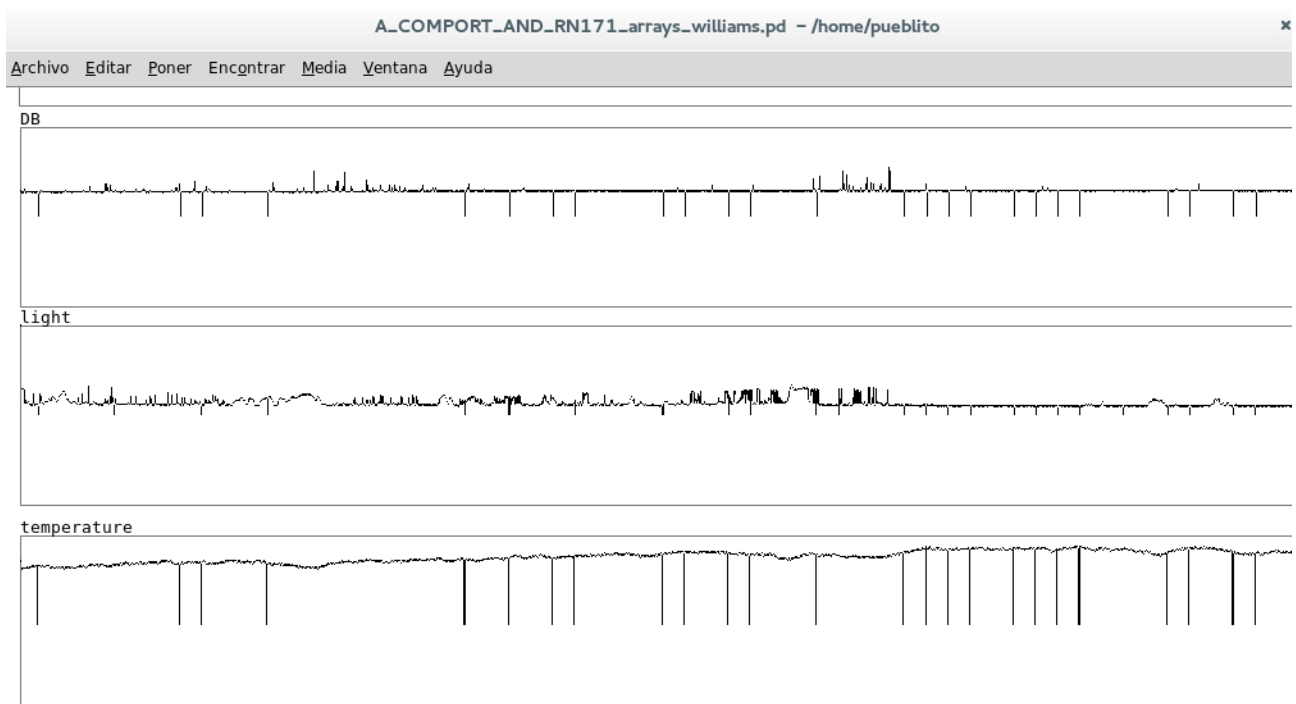
light

temperature

Figure 16 Ukika. Arrays of ultraviolet, temperature, decibels and light detection in Puerto Williams. With errors due to low battery of equipment (2015)

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UV   tabwrite UV

light

temperature

Figure 17 Ukika. Arrays of ultraviolet, light and temperature detection in Punta Arenas Implemented in Pure Data (Pd) (2015).

- Statement of the aims and objectives of work

The research will seek to establish that sites can be considered as composed of intertwined simultaneous oscillations of hidden phenomena that are nevertheless real and leave material traces including varying ranges of audible and inaudible frequencies including infrasound, microwaves, ultra sound, very low frequencies and so on.

Work engages the capacity of media art to function as instruments to detect these rhythms, e.g. as intervening interfaces, cartographies and performative agencies that make the imperceptible accessible to the senses.
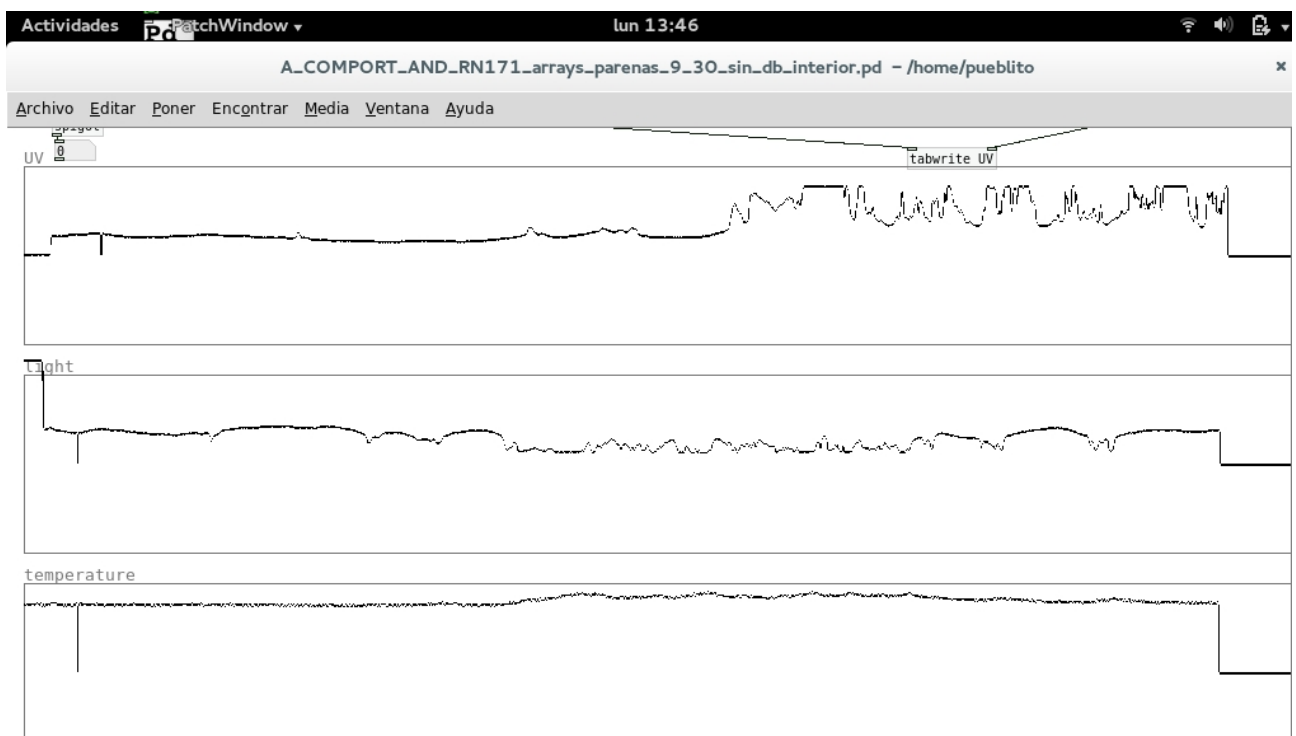
1. To make different unperceivable formations of site tangible by developing modes and approaches to mapping these formations using a variety of media and performance approaches.

2. To situate the work within relevant wider ideas of space, site and affect in order to ground it theoretically.

3. To study and compare fluctuations, changes and rhythms in different sites, urban and natural that may constitute intensities and the accretion of material through fieldwork, site visits and practice-based methodologies.

4. To deploy cartographies that visualize the rhythms, concentrations, flows and fragileness at these sites inclusive of both material energies (e.g. hertzian) and semiotic forces as deployed through the invisible, affective and unconscious domination of capitalism.

- A contextual review situating research in context*

While there is a heterogeneous range of practices and ideas related to this project thematically and critically, little work has been attempted within a specific media arts practice-based research frame that is concerned with rendering the spectral aspects of site.

In *Earth Computing* (2013 - ongoing) artist practitioner Martin Howse interfaces earth, soil and fungal matter with electrodes and code to generate noise to reveal hidden electrical properties of matter perform anomalous behaviours such as generated noise. In this and other projects his research touches on alchemy and literature and speculates around virus, plagues and the particular qualities of code in relation to humans. His interest is focused on software and at finding the exact place of execution, that is where software boots, the question remains open, is it in computer hardware, in soil, water, human flesh? a boundary in the imagination? His questions about site of execution correlates to this investigation in that it seeks to transcend the limits of geography looking for sites in the realm of frequencies and the politics attached to them.

Similarly, the work of the Pickled feet workshop (2007-2010) led by Martin Howse and the psychogeophysics workshop led by Jonathan Kemp (2008-ongoing), have set up a methodology for studying electromagnetic and electrochemical materiality that is of interest for this research since combines a collaborative perspective and the incorporation of literature and fiction within a scientific exploration of the real.

In the field of music the work of Alvin Lucier, is paradigmatic of a tradition that takes into consideration inaudible processes[15]. As Brandon LaBelle asserts, "Alvin Lucier's work and career

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[15] An example of this is Music for solo performer (1965) a piece where brainwaves are used to generate audible sounds, with electrodes attached to the head of the performer who then looks for alpha state brainwaves to trigger

has been characterized by a continual fascination and explorative pursuit of how sounds work as a physical phenomena. Quoting theorist James Tenney he continues, "Lucier has always taken great care to design his pieces so that their physical character was not observed" this is unquestionably a significant element for the physical character is, to a great degree, the entire point of his work. Tenney's use of the work "design" rather than "compose" or "write", also seems to signal an understanding of Lucier's work, in so far as "designing music" highlights concern for the physical and the possibility of music playing a role in revealing phenomena. In his work, forms of composition operate more as structures through which experiments can be conducted, ultimately bringing forward existing phenomena through what might be called "poetic science"[16] ". Between 1967-1975 Alvin Lucier became interested in electromagnetic sounds and made performances using pre-recorded whistlers and spliced together short samples in chronological order (*Spherics* 1988)[17] Whereas Cage's *Imaginary landscape number 4* for 12 receiving sets explores on the use of radio[18]. In 1968 Stockhausen used radio sounds to explore on a music of the whole earth in the work *Kurzwellen*.

In *Sonic Weapons*, Steve Goodman[19], explores the relation between the military and entertainment complex describing how since the 1990s sound devices have been used as a means to control crowds. Silent sound waves below 16 Hertz, can be felt by our bodies in the form of pure vibrations which may elicit psychophysiological response, difficulty to breath, dizziness, panic. Infrasound may induce the inhibition of breathing, intense feelings of anxiety and nausea. Goodman shows how throughout history ultrasound and infrasound technologies have been used to modulate and control human behaviour for military or civilian control purposes[20]. In *Sonic Weapons* an analysis is realized on the politics of frequencies and the concept of Afro futurism is mentioned as a strategy on a micropolitical scale. This concept coined by theorists as Kodwo Eshun and science fiction writer Octavia Butler follows the work of musician Sun Ra and is related to a kind of futurism that points out a relation with operations of overcoding which is of relevance to Henri Lefebvre. Afrofuturism reveals the potential of fiction as a mode to emancipation within and against the forces of capitalism.

The infography "*Self economy*"[21] (2008) of french artists, Bureau d'etudes describe the machinic relation between the self and its agencies describing affect from a diagrammatic perspective.

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percussions.

[16] Brandon LaBelle (2006) Background noise. Perspectives on sound art . p.124

[17] Dunne p.84

[18] "Two performers each operate radios whose kilocycle, amplitude, and timbre changes are notated". http://www.medienkunstnetz.de/works/imaginary-landscape-4/ Accessed on December, 2014

[19] Steve Goodman (2010) Sonic Warfare: Sound, Affect and the Ecology of Fear

[20] Like the Universal Funk Campaign led my U.S. Army in Vietnam, in Steve Goodman, Sonic weapons.

[21] http://bureaudetudes.org/2008/01/20/self-economy-bureau-detudes-2008/ accessed in december, 2014

Figure 18 Bureau d'études (2008) Self economy http://bureaudetudes.org/2008/01/20/self-economy-bureau-detudes-2008[22]

The geographer Paul Torrens[23] (2007) has worked on the visualization of electromagnetic wireless signal fog and states the existence of chaotic and decentralized topologies of wi-fi networks. These variant formations have an effect over the efficiency of telecommunications but also a controverted effect over the bodies and tissues of plants and animals. Similarly *Wi-Fi camera* by Bengt Sjölén and Adam Somlai Fischer, with Usman Haque[24] is an example of how to make these landscapes visible. The influence and presence of electromagnetic activity and infrasound were also investigated by Haque in *Haunt* (2005), a work whose objective was to determine whether infrasonic frequencies and magnetic field fluctuations similar to those found in supposedly "haunted" spaces can elicit physiological or psychological effects similar to those experienced in "hauntings".

The work of Seth Kim Cohen is also relevant as he explores the concept of non cochlear sound, assimilating it to the Duchampian critique of painting named as non retinal painting. His work dwells on about the persistence of sound in memory and sound as a psychic dimension, quoting Lyotard essay on John Cage called *Several silences* (1979)[25]. Will Schrimshaw work is also

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[22]   Accessed in February, 2015.

[23] Torrens, Paul (2007) Wi-Fi Geographies. School of geographical sciences. Arizona State University

[24] The camera is based around the principle that "radio waves at WiFi's wavelength behave similar to light in that they are reffected off almost all solid objects to varying degrees," meaning that - just like light - it creates a vista, being bounced around, diffracted, and
diffused invisibly around us. By strapping a series of WiFi antennas to some custom signal analysis equipment, the WiFi Camera turns the invisible visible: capturing an image of how the view looks in the 2.4GHz spectrum. Source: http://www.bit-tech.net/news/bits/2010/04/23/wifi-camera-eschews-visible-spectrum/1(accessed december 2014)

[25]   "The death drive is marked by surges in tension, what Klossowski calls intensities, Cage events. Dissonances, stridences, positively exaggerated, ugly, silences"p.92 Several Silences by JF Lyotard, translated by Joseph Maier.

to be taken into account as he explores the subliminal influence of background ambiances and atmospheres and he develops some experiments in diagrams. Another interesting work is *The Bubbles of Radio* (2007) by Ingeborg Dehs Thomas, where she explores a visualization of Hertzian Space[26] as well as fictional characters found in such dimensions.

In his book Hertzian Tales (1990), Anthony Dunne exposes clear innovative approaches to electronic products, aesthetic experience and critical design. Some concepts expand the traditional views on the electronic objects, user friendliness, whereas a form of gentle provocation, could characterize the "postoptimal object"[27]. Through the concept of parafunctionality he investigates the design of function (rather than form) to provide new types of aesthetic experiences[28].

Dunne and Goodman expand on the use of fiction as a terrain to develop narrative and design. In the chapter "Real fiction*"* Dunne (1990), discusses systems of presentation and consumption for ideas which, unlikely to be mass produced or even prototyped, exploit the conceptual status of objects and ideas.

Radio and beams (1992) an installation by Patrick Ready[29], draws attention to the possible harmful effects of the radiation leaked by domestic appliances. It consists of electrical devices suspended on wooden shelves from the gallery ceiling. Around them hang small paper bags containing fast growing mung beans in soil, arranged at equal intervals in a three dimensional grid and watered three times a day. It was hoped that the beans would exhibit effects from the electrical fields through irregular patterns but as the experiment was not controlled and scientific but ironic, it was never clear how the beans were affected[30]. *Bat band Converter* "a parasitical device that allows you to use your AM portable radio to tune in to the unheard world of bats. The device converts the non-electromagnetic ultrasonic signals of the bats into radio signals which are transmitted-leaked to the host radio".[31] Other relevant works include Timo Arnall's *Light Painting Wifi*. Lozanno-Hemmer *Frequency and Volume* and Jon Ramos' *Twillinght Immunity Museum or Skundra Signal*[32]. Practices of experimental cartography are also relevant to this research and an analysis will be made of their methods (including Laura Kurgan's use of GPS technologies to map space and Luka Frelih maps of cities developed using bicycle rides).

Theoretical perspectives

The methodological approach of research is informed and framed by a body of theory concerned with media (Fuller, Goodman, LaBelle), site/place (Kwon, Lippard), and critical theory and politics (Guattari, Lefebvre, Simondon and Baktihn amongst others).

A critical approach to the idea of media interfaces as cultural artifact is central to this study. Matthew Fuller, develops the concept of media ecologies to expand understanding of how electronic media interface with wider material and cultural processes. For Fuller media "as parts no longer exist simply as discrete bits that stay separate; they set in play a process of mutual stimulation that exceeds what they are set as set"[33] . In doing so draws upon traditions related to environmentalism, ecosophy and information ecology[34] and is particularly indebted to Guattari's use

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Plusieur silences. Text published in Musique en jeu, 9 november 1972. This translation of Joseph Maier was published in Driftworks, R. McKeon (ed),(New York, Semiotext(e), 1984

[26] See more at: http://interartive.org/2011/10/hertzian-spaces-invisible-fields/#sthash.O4rOU46V.dpuf Accessed in December 2014.

[27] User unfriendliness such as estrangement and alienation in the design of electronic objects (p.14) may expand the program of the designed objects that are then designed not to satisfy the consumer or even to trigger unpleasant affections.

[28] Anthony Dunne, Hertzian Tales (1990) p.14

[29] Installation "Radio & Beans" at Radio Rethink, Banff Centre 1992

[30] Dunne p.89

[31] Dunne p.91

[32] See more at: http://interartive.org/2011/10/hertzian-spaces-invisible-fields/#sthash.O4rOU46V.dpuf

[33] Fuller. Introduction:Media ecologies p.1.

[34] "(including)Marshall MacLuhan, Lewis Mumford, Harold Inns, Walter Ong and Jacques Ellul"

of the term ecology which formulates sites of ecology as operative at the intersection of natural environments, human subjectivity and technological forms; ecosophy thus formulated is "profoundly political, ethico aesthetic at all senses[35]. Additionally Fuller refers to Kurt Schwitter's concept of Merz and to the work of the artist as Merzbilder or a builder of merz. Namely that objects are considered as processes embodied as objects, as elements in a composition[36]. Fuller's assertions point towards the understanding of a deeply materialist point of view, "a fundamentally materialist account of the world (...) it is a materialism that acknowledges and takes delight in the conceptuality of real objects. All objects have poetics, they make the world and take part in it, and at the same time synthesize, block or make possible other world"[37].

Fuller also acknowledges the work of media theorist and educationalist Neal Postman. In his work "media ecology" "describes a kind of environmentalism: using a study of media to sustain a relatively stable notion of human culture"[38]. The intellectual background of this current includes Marshall MacLuhan, Lewis Mumford , Harold Inns, Walter Ong and Jacques Ellud amongst others[39]. "A third stand of use of the term is discernible in some of the most interesting parts of literary cognate studies in the recent decades in for instance, the writings of Katherine Hayles, Friedrich Kittler" [40](...)

Ecology as well implies a relation with the environment and its various iterations and re-versioning in the arts through the concepts of 'site', 'place' and 'landscape'. In this respect, the book *The lure of the local* by Lucy Lippard (1997), renders an extensive review on the artistic development of this concept. She includes a definition of landscape by British geographer Denis Cosgrove. As "the external world mediated through human subjective experience"[41]. Space defines landscape, where space combined with memory defines place. The spatial experience of a landscape can be impressive because it evokes a known place or, on the other hand, because it is so totally unfamiliar[42].

As mentioned in the introduction a key focus of research is concerned with making tangible rhythms of sites at different frequency ranges. Different art practitioners have constituted a corpus of work in this domain as discussed in the contextual review, however from a research perspective little work has been attempted that frames these approaches within wider critical traditions. Research will engage with ideas elaborated by Lefebvre[43] that theorise site as a fluid or rhythmic rather than a singular or smooth unitary reality, e.g. a rhythmanalytical perspective sees objects, subjects, things and phenomena as interconnected by trajectories and fluxes. Work will also be based in the semiotics by C. S. Peirce reviewed in the texts of Guattari on affect and subjectivity, specially in relation to the influence of semiotic structures in urban space. The research aims to uncover diagrams of significance active in urban sites. The term is used in this context to acknowledge the machinic formations of signs and frequencies in space. Making a direct reference to Guattari and Deleuze, abstract machines structure relations and plot circuits of control and zones

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[35] Fuller. Introduction. p. 5 "Equally Guattari's repeated linkage and cross fertilization of the modes "mental","natural" and "social"of ecology within ecosophy provides insight into the way that any of these or other modes of an ecology always demand carrying over into another mode, another universe of reference and always another , in order for these laboratories, whether in texts persons, movements, or at other scales, to have any function". p.5.

[36] op. cit. p.1.

[37] op. cit p.2

[38] Op cit. p.4

[39] Op cit. p. 4.

[40] Op cit. p.4

[41] Lucy Lippard, The Lure of the Local (1997) p.7

[42] Op cit. p10

[43] "(...) a viable parallel may be drawn with physical phenomena (waves, types of waves, their associated "quanta". The classification of radiation in terms of wavelenghts)(...)A paradoxical implication of this paradigm is that the shorter the wavelength, the greater the relative quantum of energy attaching to each discrete element. Is there anything in social space comparable to this law of physical space? (...) Lefebvre, H (1996). Writings of cities p.87-88"

of influence that constitute an affect in interaction with human subjectivity. These references are described in A thousand Plateaus[44], particularly in the chapter 0,000 B.C.: The Geology of Morals. Whereas in the chapter, November 20, 1923—Postulates of Linguistics they analize the influence of what they consider the elementary unit of language, the order word, as a faculty that centralizes information[45]. These considerations are to be applied to the study of congested sites in cities.

It is expected that an investigation of affect, in relation to the work of Simondon will also inform this study at various points. His notions allow us to think of the creation of entities in processual and relational terms. His is a philosophy of nature that leads to the understanding of individuation processes beyond identity and within different domains of reality (physical, biological, psychosocial). Brian Massumi, interprets Simondon's work and refers to the term quanta taken from theoretical physics that in Simondonian language refer to germs of forms[46] present in an emergent dimension along with unformed elements such as tropisms.

- ▪ In practice based research in Art and Design an indicative description of the proposed practice should be included detailing the scale, level and measure of completion and possible forms of exhibition*

In addition to the on-going work already described, fieldwork realized in isolated sites such as Antarctica, Navarino island, Tierra del Fuego should be continued. Other works will cover desert areas such as ALMA astronomical complex in Atacama and possibly Salar de Uyuni in Bolivia. The comparison with congested sites in cities will be performed in areas within the cities of London, Barcelona, Berlin, Madrid and Santiago de Chile.

Conferences and seminars. The participation in conferences and seminars around the topic of landscape, electromagnetic formations and Free Open Source Technologies will be aimed as a way to distribute the knowledge gathered and perform alliances with partners, artists and scientific institutions.

Residencies, will be pursued in places that facilitate the work with practitioners working in the area of FOSS technologies and art and science. Through these residencies the development of technologies will be pursued as well as collaborative work in the area of visualization and sonification of data. As in the past the Interactivos workshop in Madrid facilitated the realization of the fisrt test of Semiotic Energies, at the moment I will be working with artist Oscar Martin in Hangar in Barcelona.

Sonifications. Graphs, cartographies and experimental photography. These forms of representation will be developed as means to synthesize field work into material forms to be shown in exhibition contexts.

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[44] Deleuze and Guattari (2004) A thousand plateaus : capitalism and schizophrenia
[45] A thousand Plateaus (). p.95
[46] "The atom interacts with other atoms through the clinamen, and in this way it can constitute an individual with other atoms through the clinamen and in this way it can constitute an individual (though not always a viable one) across the entire expanse of the void and the whole endless becoming. Matter can be impressed with the form and the source of ontogenesis can be derived from this matter-form relation. Indeed if haeccities were not somehow inherent within the atom, or matter, or indeed form, it would be impossible to find a principle of individuation in any of the above mentioned realities (G. Simondon The genesis of the individual in Incorporations (1992) (p.298)"

Practice and theory will work synergistically to drive the research forward. Particular bodies of theory (e.g. Lefebvre) will be drawn upon to provide insights into affect, space, and the performative realization of site so as both to inform thematic developments of practice and also situate it within wider critical contexts. Likewise insights arising from practice will inevitably lead to encounters with other bodies of theory as appropriate to the unfolding needs of the study.

Performative experiments

Visualising textual data utilizing semantic models (latent semantic analysis i.e.)
A prototype of this experiment was performed in Madrid, in Interactivos workshop at Medialab Prado in Madrid (2014). It was designed following these stages:
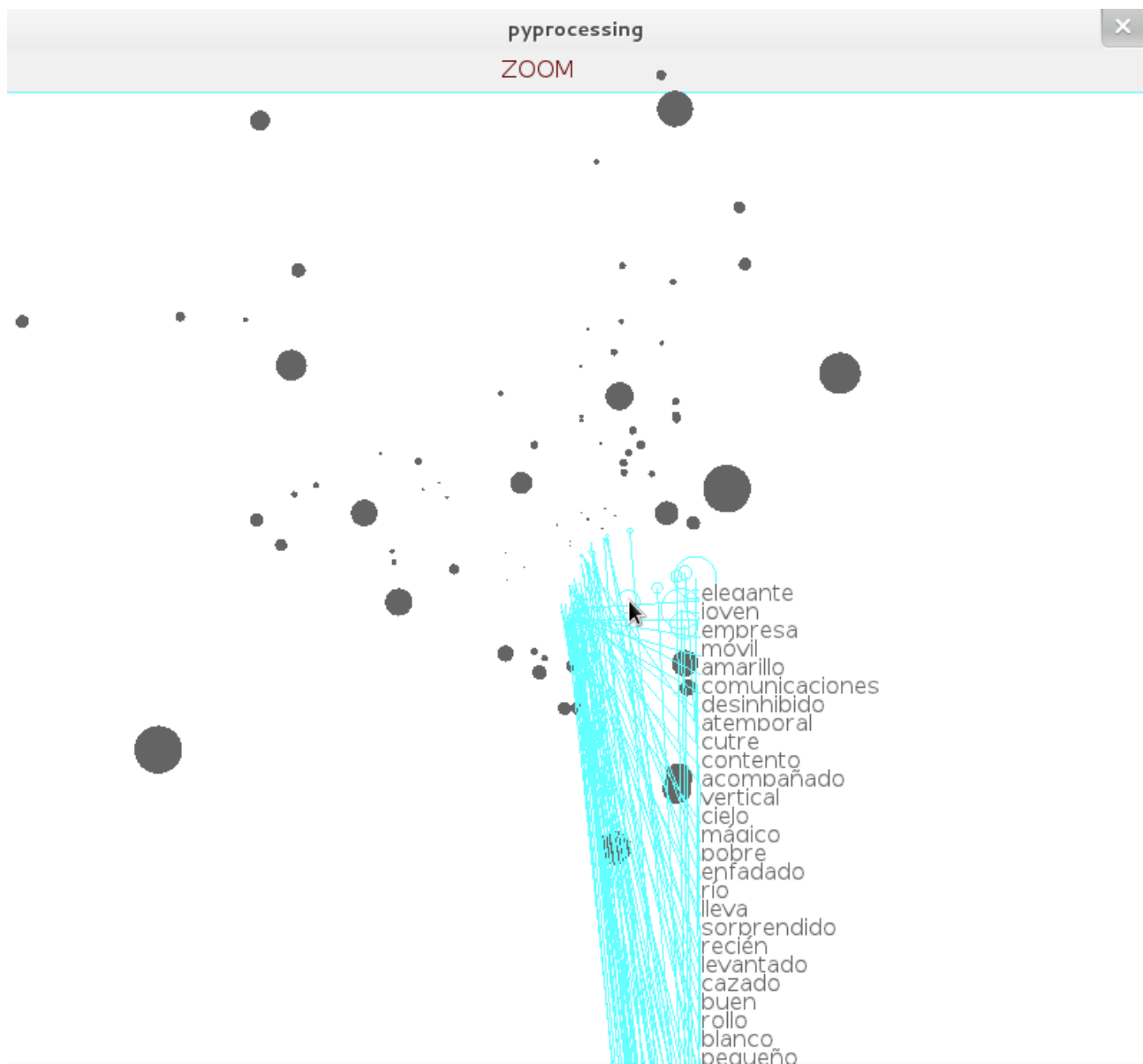Data Acquisition: From pictures taken during visits to the chosen sites.

Figure 18 Pyprocessing interactive graph of semantic analysis of signs found in Madrid (Plaza, el Sol, Callao, Calle Preciados) developed in Interactivos, medialab Prado, Madrid. *Semiotic Energies* (2015)

Graphs and Diagrams
Sonifications
Sonification of data obtained in different sites.

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