Technology and Affect: towards a theory of inorganically organised objects

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in Emotion, Space and Society (2014) doi:10.1016/j.emospa.2013.12.017

This paper links debates around technology, materiality and affect to generate a theory of inorganically organised objects and affects. Drawing upon the work of Bernard Stiegler and Felix Guattari, the paper suggests that technical objects can be understood as assemblages of matter, which are organised by material thresholds that shape their capacity to affect. The paper then argues that technical affects are transmitted via material mediums such as air that it terms associated milieus. To understand the affective capacities of technology, one should understand how technologies reorganise and draw upon associated milieus' to generate affect and how the material thresholds of objects shape what these affects are. Developing a number of examples, the paper shows how inorganically organised affect reorganise the body and corporeally affects capacities to act and respond to the world. In conclusion the paper suggests an account of affect that focuses on objects has methodological implications for social scientists interested in studying technical processes and environments.

Key words: technology, affect, body, milieu, space, technology

1. Introduction

Affect is now a widely discussed issue in the humanities and social sciences (see Massumi 2002, Connolly 2011, Dawney 2011, Pile 2009, Bondi and Davidson 2011, Curti et al 2011, Leys 2011). On a basic level affect has most often been understood as the 'capacity to affect and be affected' (see Thrift 2004). Beyond this basic definition there are many particular theories of affect, all emergent from their own theoretical schools and traditions and each with their own ontological and epistemological baggage (such as post-structuralism, psychoanalysis, phenomenology etc). Perhaps the most popular of these theories is Gilles Deleuze's account of affect, itself drawn from the work of Benedict Spinoza and modified and publicised through the work of Brian Massumi (2002) and William Connolly (1999), amongst others. For Deleuze (1988), affect is the outcome of the encounter between entities and how entities are affected by these encounters. Examples include how a plant may be affected by water, which causes it to grow, and how an animal may be affected by poison, which causes it to die. Rather than defined by their substance, size or species, Deleuze (ibid, 124) suggests that human and non-human entities can be defined and compared through their affects. For example, from this affective perspective, a sports car and a race horse have more in common than a race horse and a cow because the sports car and race horse share more affects (such as a capacity for speed or an ability to manoeuvre quickly).

With this perspective in mind the aim of this paper is to modify Deleuze's theory of affect using the work of philosophers Felix Guattari and Bernard Stiegler to generate a theory of technical objects and affects it terms inorganically organised objects and inorganically organised affects. Briefly, inorganically organised objects can be understood as assemblages of manufactured components that allow an object to perform some kind of task or activity. Inorganically organised affects can be defined as affects that are shaped by and emerge from these objects. The potential for an affect to be generated by a technical object, is, in turn, shaped by what could be termed the material *relations* between components that make up an object and the absolute material *thresholds* that define an object by what it can do. Material relations between components can be understood as the range of movements, changes and translations that are required for a technology to undergo its normal operations. For example, an Apple iPad will only operate if the relations between

particular components, such as the screen, battery and graphical processer are organised correctly, which in turn allow the iPad to translate various forms of energy, such as electricity, into images and sound. Material thresholds are the limits that determine the potential affects an object can generate, which in turn define what that object is. For example, smashing an iPad's screen creates a situation in which the screen can no longer translate touch into digital data, but now gains the capacity to cut or slice through skin, translating sharpness into pain. Smashing the iPad's screen is a process of surpassing the objects absolute material threshold and in doing so creates a new object. From an affective perspective the iPad with a smashed screen becomes more closely related to a knife or cutting blade, than another tablet PC because it now shares more affects with a knife (a capacity to cut) than with a digital computer (it can no longer process data).

The purpose of developing an account of inorganically organized objects and affects is threefold. Firstly, while Deleuze (1988) emphasises the non-human character of affect, many current studies begin and end with affect as experienced by a human being through their particular emotional capacities. For Massumi (2002), emotions are personalised affects. For example, an image may cause the hairs to stand up on the back of our neck (an affect) and be personalised into the emotion of fear. While there is undoubtedly a link between the affective and the emotional, this paper conceptualises affect as force that has the capacity to transform the corporeal and material basis of the human body in ways that are not reducible to a subject's emotional state. Developing an account of inorganically organized affect offers another way of approaching the affect / emotion nexus.

Secondly, developing a theory of inorganically organised objects and affects attempts to add conceptual clarity to the distinction between the cognitive and non-cognitive that is often invoked in theories of affect (Anderson 2006). Affect is regularly discussed as operating on a reflex, or unconscious level (Massumi 2002). Discussing the phenomenon of laughter in the work of William Connolly, Ley's asks whether a distinction between the cognitive and the non-cognitive is helpful:

"Is Connolly implying that, by analogy with the pain reflex, laughter can also be understood in reflex terms? If so, he is implicitly arguing that far from being a complex, social-cognitive phenomenon, laughter as an expression of amusement can be conceptualized as an automatic response to stimuli without regard to the meaning those stimuli might have for

us, since they are intrinsically capable of triggering a laugh reflex" (2011, 461-462).

An account of inorganically organised affect seeks to show where particular affects emerge from and thus show how particular forms of reflex are the product of the development of particular technical objects, through theorising their particular material components and thresholds. In this case, the cultural, somatic, technical and historical cannot be separated into distinct or discreet categories because the material components and thresholds of an object are intimately related to their design, manufacture and use. Returning to the iPad example above to clarify this, the capacity of the screen to resist smashing (which emerges from the objects material relations and thresholds) are dependent on a whole range of broader economic and political processes around manufacturing safety standards, the history of glass production and consumer rights amongst many others factors.

Thirdly an account of inorganically organised affects allows us to understand how particular affects travel and are transmitted between and across particular bodies and environments. This is pertinent, because critiques of affect often ask how such transmission is possible. As Steve Pile suggests:

"The space between bodies is not bridged by pipes and cables, but is an invisible field within which bodies are always already located. But what is the nature of the ether that carries affects? How do we 'pick up' affects? And how far do they reach – from one body to another, across a room, through a city, nation, world"? (2009, 16).

This paper develops the concept of material thresholds to argue that objects generate and transmit affects themselves. As I demonstrate in section two and three, concentrating on how actual objects generate, translate and transmit affect makes it easier to understand where affects come from, how they travel and what their effects are. This in turn is linked to the methodological potential of affect as a concept because one can then think about and trace the particular actors, objects and institutions, which attempt to shape affect for their own ends and purposes. This point is especially cogent considering critiques of affect often point to the abstract and undifferentiated nature of affective accounts of the social (Thien, 2005, Tolia-Kelly 2006).

The paper answers the question of transmission specifically by suggesting that affects

cannot be thought outside of an environmental or ecological context. As section three argues, affects always travel through an 'associated milieu' composed of some form of matter or another. In this case affects are a matter of force as much as any kind of content. Thinking through this associated milieu also allows us to consider how the same affective force has differential impacts dependent on the body or entity it encounters and how single objects can create fields and atmospheres of affects that spread across and through a space.

To make these claims the paper forms three parts. In section two I turn towards Stiegler's account of inorganic organised being and Guttari's account of the technical assemblage to theorise how the material components and thresholds of objects shape their capacity to generate and transmit inorganically organised affects. In section three I develop the vignette of sound and tinnitus (an experience of ringing in the ears) as a way to understand how technical objects produce inorganically organised affects and how these affects shape and alter the body. Tinnitus is one of many possible examples that could be used to illustrate the idea of technical affect, but is particularly helpful for two reasons. First, tinnitus clearly shows how affects are generated by technical objects and travel through associated milieus. Second, tinnitus points to the affective afterlives that specific technical affects can have, which are often ignored by literatures that valorise affects as only existing at particular moments of encounter. In conclusion I offer some suggestions as to how an object centred account of affect can be helpful for those wishing to study affect empirically.

2. Theorising inorganically organised objects

There is a variety of existing work on technology and affect (Parisi, 2013, Hansen, 2004, Clough, 2008, Thacker 2004). This literature is divided on whether affects can be differentiated according to their status as either natural or technical. For Deleuze, whose work on Spinoza is so often used as the basis for thinking on affect: "the plane of nature that distributes affects, does not make any distinction at all between things that might be called natural and things that might be called artificial" (1988, 124). Like Deleuze, Patricia Clough critiques the possibility of an ontological separation between organic (natural) and inor-

ganically organised (artificial or technical) affect. As she writes in relation to the work of Mark Hansen:

"Whereas Hansen's treatment of new media insists on the difference between the human body and human–machine assemblages, between bodily affect and digitization – differences that hark back to the differences that haunted constructionism, Eugene Thacker's treatment of biomedia reveals the informational substrate of the body and the impossibility of the distinctions Hansen seeks to maintain. Thacker argues that the body of bio- mediation is not merely a body-as-constructed, given that 'constructionism formulates an ontological division between the 'bio" and the "media," such that the latter has as its main task the mediation of some unmediated "thing' (Thacker, 2004: 12)" (Clough 2008 p9).

Clough suggests that there is no distinction between organic and inorganically organised affect because as Thacker argues, to be human is to be shaped by and immersed in technical affects. From this perspective, technology and biology are intimately connected through affective feedback loops to the point at which a distinction becomes difficult to maintain. For example, Gorman (2012) argues that from an evolutionary perspective, the development of cultural technologies such as cooking and how cooked food affected the body led to increased brain size. As Stiegler (1998) suggests, these kinds of development then encouraged further technical innovation and thus the generation of new inorganically organised affects.

I would agree with Clough, Thacker and Deleuze that there is no necessary *ontological* distinction between organic and inorganically organised affect. However, creating a distinction between these types of affect is useful in order to further understand how affects travel and can change as they travel. Recognising and highlighting that affects are organized in different ways, by both humans and non-humans alike encourages one to trace where these affects emerge from, who (attempts) to organise them and for what purpose. An account of the material thresholds of objects and understanding the associated milieus that they move through, allows one to focus on the sites and processes involved in the production and transmission of affect. These concepts also allow us to recognise the material, discursive and atmospheric structures that enable and cultivate this transmission (also see Protevi, 2009).

Indeed, technical affects are not the only kinds of affect that are organized. Alongside inorganically organized affects we could state that many affects are also organically organized. For example, a spider spinning a web organises its affects into a specific sequence in order to produce the material structure that we know as a spider's web. To unpack the difference between concept of inorganically organized affect and other forms of affect in more detail, we can turn to the work of Bernard Stiegler. In the Technics and Time series of books (1998, 2009, 2011), Stiegler develops the concept of "inorganic organised being" (1998, 17) to rethink the status of technical objects in philosophical analysis. Inorganic organised matter refers to matter that has been shaped by human beings for some human purpose, while also existing separately from the human (also see Ash 2012). Inorganic organised matter would refer to all manner of technical things, across a variety of material states and conditions. For example, a hammer would be an inorganic organised form of matter, as would a light-bulb or electricity or desalinated water. In each case, matter is being shaped and channeled in some way for human ends. Stiegler is most concerned with how various forms of inorganic organised matter operate as forms of tertiary or externalised memory, and how that memory shapes humans' primary retention (perception) and secondary retention (memory). In terms of a contemporary example, a mobile phone's address book replaces the need for a human being to memorise the phone number of friends and acquaintances (Stiegler, 2010). On a more basic level objects carry a series of somatic prompts in their material structure as to how they should be used. For example, a pen encourages one to hold it in a certain way in order to write. In this case, the practice of writing is partially preserved in the pen itself. Stiegler does not discuss literatures surrounding affect in any great detail in any of his work (although on *dis*affection see Stiegler 2013). However, Stiegler's work does offer ways for thinking about how technical objects are affective. Stiegler is keen to emphasise the *autonomy* of technical objects. Technical things are not just the products of, or servants to, human activity but also have an autonomous existence outside of their human uses.

In this regard, the work of Gilbert Simondon is central to Stiegler's account of technical being (see Stiegler 1998, 23). One of Simondon's claims regarding technology is that while individual technical objects are composed of relations they also exist in a state of (often fragile) homeostasis (De Boever 2012; Combes 2012; Chabot, 2013). Homeostasis can be defined as a: "relatively stable state of equilibrium or a tendency toward such a state between the different but interdependent elements or groups of elements of an organism,

population, or group" (Merriam Webster, 2013). Simondon argues that all technical objects have to exhibit some form of homestasis in order to exist as such. Giving the example of a simple oil lamp, Simondon suggests: "Think of a lamp which would catch fire, which would not have this control allowing combustion to be stable. This lamp would not be destined to exist, precisely because it would be self destroying" (Simondon 1970, NP).

Arguing that inorganically organised objects are homeostatic is not equivalent to suggesting that they regulate themselves in the same way as organic or biological bodies. As Simondon suggests:

> "the living conserves within itself a permanent activity of individuation. It is not only the result of individuation, like in the case of the crystal or the molecule, but it is the theater of individuation: not all of the activity of the living is concentrated at its limit, such as with the physical individual. Within the living itself, there is a more complete regime of internal resonance, one that requires permanent communication and that maintains a metastability that is a condition of life" (2009, 7)

Here Simondon argues that in a physical being, such as a crystal or a molecule, activity is 'concentrated' at its limits. Whereas a crystal's existence, form and shape is determined by its environment alone, a more complex object, such as a human body, can regulate itself according to varying internal systems as well as in response to a relationship with its environment. Organic processes of homeostasis in the human body involve receptors, control centres and effectors, which can dynamically respond to events both within and outside of the body. In the human body, homeostatic processes can also operate in negative and positive feedback loops, working to minimise change (such as when regulating body temperature) or to increase change (such as blood clotting when the body is wounded). While living organisms have homeostasis, they also have varying systems that regulate their homeostasis. In contrast, for most technical objects the very potential for homeostasis is defined in advance, at the moment of that object's design or manufacture. As Simondon goes on to elaborate:

> "There is, in the living, an individuation by the individual and not only a functioning that would be the result of an individuation completed once and for all, as if it had been manufactured; the living resolves problems, not only by adapting itself, that is

to say by modifying its relation to the environment (which a machine can do), but by modifying itself, by inventing new internal structures and by completely introducing itself into the axiomatic of vital problems". (ibid, 7)."

A key difference between organic homeostasis and inorganically organised homeostasis is, therefore, the level of complexity of the systems that regulate an object or body's capacity to maintain equilibrium and their (in)capacity to generate new internal regulatory systems and mechanisms. Again, in Simondon's words: "the living is…the being that is the result of an initial individuation and that amplifies this individuation—an activity not undertaken by the technical object" (ibid, 7). He suggests that many technical objects' capacity for homeostasis is not dynamic; instead it is defined at their moment of manufacture, which alters how we consider these objects to generate and transmit affect. For technical objects, homeostasis emerges from the material components of objects and their thresholds, which both contain, limit and enable the object to operate as it should and in turn shape the kinds of affect it can generate. In the case of the oil lamp discussed above, if the sides of the container were too shallow, or the wick too close to the body of oil this could cause the flame to become too large and destroy the whole object, rather than produce a steady flow of light. In other words, once technical objects have been manufactured they can have a series of unanticipated and unthinkable consequences because they have to have a degree of homeostatic autonomy from the humans that made them. Similar to Paul Virilio's account of the 'original accident' (2007), in which the invention of the train brings with it the invention of the train wreck, Stiegler suggests that technology exhibits an evolutionary tendency to diversify and complexify through processes of emergence. Just as one technology brings with it new potential capacities and relations, these potentials also shape how the proceeding technologies emerge. The invention of the computer is a good example, bringing with it the potential for the development of the computer game (which was never conceived as part of the computers original design).

As such, while any piece of technology is autonomous from human beings, technology can only operate or make sense in relation to a broader ecology of technical objects. Guattari terms this ecology an ensemble. As Guattari puts it "the technical object…[is]…nothing outside of the technical ensemble to which it belonged" (1995, 36). For example, a smart phone requires a battery in order to operate, which requires a charger to charge the battery and a plug socket to plug the charger into and so on. In this example, while the phone

call is what matters to the human user, the phone call is only possible because of a broader technical ensemble that underlies it. Returning to Deleuze's account of affect, any technical ensemble requires the exchange of a complex series of affects to take place between these particular objects for the phone call to take place, such as a human voice to affect a microphone, which translates soundwaves into electrical signals and so on.

Technical objects operate as sites of translation, where affect is produced and translated into different states and forms for different purposes. How a technical object produces and translates affect is dependent on the particular material components that make up an object and the material thresholds of the object that enable its homeostatis. Guattari discusses the relationship between technical objects' homestasis and their material thresholds through the operation of a simple lock and key. Within this operation Guattari argues that two forms of threshold are in play, which can be termed the objects relative material thresholds that exist between the components that make up that object and the absolute thresholds (that Guattari terms a diagrammatic threshold), which are the thresholds that need to be maintained for an object to be homeostatic. In his own words:

> "Two types of form, with ontologically heterogeneous textures are at work here: 1) materialised, contingent, concrete and discrete forms, whose singularity is closed in on itself, embodied respectively in the profile FL of the lock and by the profile of FK of the key. FL and FK never quite coincide. They evolve through time, due to wear and oxidation, but both forms must stay within the framework of a separation-type limit beyond which the key would cease to be operational; 2) 'formal' diagrammatic forms, subsumed within this separation-type, which appear as a continuum including the whole range of profiles FL, FK, compatible with the effective operation of the lock" (ibid, 43).

Here, the capacity for the key to affect the lock (and vice versa) is dependent on the materiality of the lock and key, including their shape and the material they are made out of. If the key is made out of clay for example, then the key will be too soft and not open the lock. Alternatively, if the key is made from the correct metal, but is very old and worn, the tumblers inside the lock would fail to operate and the door would also remain locked. As Guattari puts it:

> “Ferric ore which has been insufficiently worked, or deterritorialized, retains irregularities from the milling of the original material, which would distort the ideal profiles of the lock and key…A lead or golden key risks bending in a steel lock…This phenomenon of a formal threshold can be found at all levels of intra- or inter-machine relations…” (43-44).

In relation to the notion of affect, the locks capacity to affect the key and unlock the door is ultimately limited by the tensile strength of the gold or steel from which the lock and key are composed. If forced or wrenched in the lock, the key may bend or snap and the capacity for the key to open the door is lost. In doing so the key’s homeostasis also breaks down and re-establishes itself as a new object, with new affective capacities. For example, the broken key may no longer be able to open a door, but is now capable of cutting material such as cloth or paper, according to its new relative material threshold (its newly sharpened edge). However this objects new homeostasis also has a new absolute threshold beyond which it can no longer operate as a cutting edge. If blunted against steel the object would then meet and exceed its absolute material threshold and in doing so become another object.

Here affect, understood as the capacity to affect and be affected by, is relative to the particular material components and thresholds of the objects in question. For Deleuze, affects can be categorised as either positive or negative in the sense that entities can either increase or decrease capacities to act. Developing Guattari’s account of the threshold, we might argue that the affects technical objects generate can be differentiated according to the thresholds within which they translate affect. Here affect cannot be reduced to either increasing or decreasing the objects capacity to act, but shaping the thresholds within which different kinds of force travel and are experienced by different beings. Returning to the lock and key, the shape of the key determines how and where the lock and tumblers experience the force of turning the key. The force of a human hand swivelling the key in the tumbler distributes this force along the length of the keys profile and places increased pressure on the cut profile of the key where the material is thinner. In this example, affects emerge from the outcome between the different components of lock and key and are translated into different kinds of force, which then affect different points of the lock and key in different ways.

To summarise then, an inorganically organised affect is an affect that has been brought into being, shaped or transmitted by an object that has been constructed by humans for some purpose or another. As the lock and key example shows, while humans can design material thresholds into objects to attempt to control the kinds of affects that are generated, technical objects always have the potential to exceed the intentions of their design because they have a homeostatic autonomy that exists outside of any one humans grasp. Material components and thresholds can be reworked, modified or simply broken down, which in turn generates a whole new set of thresholds within which affects can operate. The difference between organically organised, inorganically organised and any other kind of affect that you may wish to mention is therefore a difference in degree, rather than in kind. The key point is to highlight who or what attempts to organises the material thresholds of an object and for what (attempted) purpose or end.

Taking the notion of the inorganic organised nature of technical objects seriously allows us to focus on how affects are generated through encounters between technical objects within an ensemble and translated, which in turn generates particular affects as human encounter them. Developing Stiegler's account of inorganic organised being and Guattari's account of material thresholds allows us to think about the ways in which affect consists, subsists and proliferates between organic and inorganic bodies and how inorganic organised objects work to shape the potential affects a person may experience when encountering a particular technology.

3. Associated Milieus and the transmission of inorganically organised affects

In what follows, I want to use the example of sound and the phenomenon of tinnitus (a ringing in the ears) to make three points to illustrate and unpack the theories developed in the previous section. First is to show how inorganically organised objects generate affect and travel through and shape associated milieus. Second is to show how an account of inorganically organised affects allows us to understand how the same affect can generate different effects depending on the bodies and objects involved. Third is to show how inorganically organised affects, such as sound, can reorganise the material thresholds of the body.

Humans have been creating sound and technologies to transmit sound for thousands of years. Today, the most common forms of technically produced sound include acoustic instruments, Public Address systems, music sound systems and machinery. From a scientific perspective, sound is understood to be composed of sound waves. According to the Oxford English Dictionary (2012), sound waves are a “wave of compression and rarefaction, by which sound is propagated in an elastic medium such as air”. The greater the amplitiude of a sound wave the more energy it has and thus the louder it will sound to a human observer. Man made sound, such as sound produced by speakers, generate sound waves by pushing and pulling a speaker cone, that in turn vibrates the air in front of the speaker, creating a sound wave.

Returning to Guattari’s (1996) account of technology, we could understand the air that is used by the speaker cone to be an associated milieu, which, in turn, is central to the production of the technical affect the speaker is designed to produce (sound). From this perspective, an associated milieu can be defined as a material medium that allows or enables an affect to travel. In the example of a speaker, air becomes an inorganically organised object as it is shaped by the speaker cone, which vibrates at a particular frequency. This vibration subsequently organises the movement and shape of the air and creates a sound wave. The greater the amplitude and intensity of the speaker’s movement, the louder this sound will be and the further it will travel across space. The volume, frequency and distance a sound can travel are therefore intimately linked to the relations between the components of that object and the thresholds of the object that produces that sound, as well as the thresholds of other objects in a particular milieu. For example, how far amplified sound will travel depends on the power and size of the speakers used as well as the objects that make up the environment in which the speaker is placed. The sound waves produced by small, low powered speakers will be stopped by the material thresholds of brick walls, whereas larger speakers will be able to alter the threshold of the brick, translating sound into vibration and then back into a sound wave, meaning that the sound wave can travel through that wall.

The concept of associated milieu can help us understand how the same affective force can have shared, yet have different impacts on the humans and objects exposed to these affects. Following Stiegler (2011b), we could argue that associated milieus, such as air or-

ganised into sound waves, become the site for the transmission of what he terms collective secondary retentions. Stiegler suggests that collective secondary retentions are forms of memory that have been widely diffused and adopted by a population of individuals. These retentions are "both secondary – because they have been conceived, selected, projected and lived by others, and have constituted their own pasts, from out of their own presents…and collective, common, inherited by everyone as the past of everyone" (2011b, 112). These collective secondary retentions are realised in a number of ways from shared forms of language, to writing, to posture. As Stiegler puts it: "to walk is already to raise oneself in this sense, and the[se]…styles of walking, gaits…are already bodily techniques, social facts" (ibid, 116). In relation to sound, at a nightclub the transmission of soundwaves from the club's PA system are the conditions of possibility for the shared activity of dancing. At the same time, multiple bodies may experience the same associated milieu, but be very differently affected by this milieu. For example, the day after visiting a night club, inorganically organised affects of sound may have manifest themselves in the form of a tinnitus perception for some club goers.

Medically, tinnitus is defined as: "an auditory perception in the absence of an external source of sound" (Weisz et al 2007, 1479). Most people have experienced tinnitus of one kind or another, usually as a ringing in the ears the morning after visiting a loud event or nightclub. However, for those with successive forms of damage, tinnitus can last a week, a month or even a lifetime. Tinnitus is thought to be caused by soundwaves entering the ear canal and damaging the sensitive hairs on the ear that vibrate and translate these soundwaves into signals processed by the brain, although current medical research is inconclusive (Saunders, 2007). Some accounts suggest that tinnitus is not exclusively caused by a single organ, or a dis-function of that organ (such as the flattening of the hairs on the inner ear); it "must involve abnormalities of both cochlear function and the processing of tinnitus-related signals within the nervous system" (Jastreboff and Hazell 1993, 8, Eggermont and Roberts, 2004). More recently work by Tzounopoulos has hypothesised that the experience of tinnitus could be maintained through plastic changes in the cortex, specifically "a region of the brainstem called the dorsal cochlear nucleus (DCN), a site of integration of acoustic and multimodal, sensory input…[which]…could "lead to long-term changes in the communication between neurons" (2008, 1). In this case a tinnitus perception is enabled by, and distributed across a number of sites in the body, rather than reducible to a single organ.

In the example of a night club used above, the PA system, the air and other objects that make up the club environment act as the basis of collective secondary retention, which are then individualised within different clubbers' eardrums, brains and nervous systems. Depending on previous hearing damage and the sensitivity of the ear, some will experience very little tinnitus, while others may experience a strong perception of ringing. As such, the material soundwaves generated by the PA system have singular impacts on particular bodily and cortical dispositions, because different night club goers are composed of organs which have different material thresholds that in turn shape how affects such as soundwaves are experienced. At the same time, the affects that sound waves generate are also collective and shared, because the bodies exposed to the sound waves were present in the same milieu.

Examining an individual's experience of tinnitus more closely allows us to understand how inorganically organised affect can create tangible effects in humans by altering the material thresholds of organs in the body. For example, tinnitus is a fundamentally temporal phenomenon. It has a specific starting point (although one may not be aware of when exactly this was) and can also fade away until it is no longer experienced. Inorganically organised affects, such as soundwaves, can therefore produce after-affects through altering thresholds that in turn shape temporal horizons of action and anticipation for the tinnitus subject. This can be experienced by long-term sufferers of tinnitus as anxiety and frustration at the seemingly unending and constant experience of the ringing perception.

In these cases, the initial soundwave that creates the experience of tinnitus alters the threshold between what Stiegler terms primary, secondary and tertiary retention (namely, perception, memory and exteriorised memory), invoking all three modes in the present of perception. The tertiary retention of tinnitus (the initial affective soundwave that generates the tinnitus) affects the body through altering the material thresholds of the eardrum to the point at which a ringing is experienced, even when the ear drum is not being affected by soundwaves. The length that one experiences tinnitus can then be linked to whether the ear drums relative or absolute material threshold has been crossed. If the tinnitus experience is only temporary, then it is possible to theorise that the soundwave has only altered the relative thresholds between eardrum and brain. If the tinnitus is permanent then it is

possible to theorise that the absolute threshold of the eardrum has been crossed and that the eardrum's capacity to affect the brain and vice versa has fundamentally altered.

While tinnitus appears to be a perception that stretches seemingly indefinitely into the future and exists as a temporal phenomenon in consciousness, tracing the affects that generated it suggest that the perception of tinnitus is produced by the durability of an altered threshold of relations between brain and ear drum. What is retained in perception is not the content (the specific pitch or volume of ringing) of the tinnitus, but the altered material thresholds between body, brain and eardrum which gives rise to the specific ringing. As the example of soundwaves and tinnitus shows, affect works through the possibilities of the milieu in which it is enmeshed. The temporality of affect is shaped by the material affordances of the objects and mediums that it encounters and displaces. In other words, affects can have traceable points of emergence and traceable afterlives. In the case of tinnitus, these after lives are retained by the body and directly feed into subjective experience.

4. Towards an object centered account of affect

This paper has theorised technical objects as having a homeostatic autonomy, generated by a series of material thresholds, which in turn frame their capacity to affect and be affected. Through a range of examples, the paper has shown how these thresholds also shape the affective capacities of the human body. We could call this type of intervention an object centred account of affect, in the sense that it seeks to understand how affects emerge from, and are translated by, objects themselves. In conclusion I want to outline some of the possibilities this type of account offers social scientists interested in studying affect, particularly around issues of methodology.

Rather than just existing or actualising in moments of encounter, we could state that affects travel across and through material environments. In doing so, affects are translated as they meet and are transformed by the material thresholds of objects. A vocabulary of *translation* and *travel* may be more helpful than one of *encounter* and *actualisation*, because this vocabulary offers a number of ways for rethinking the notion of 'historical' or 'social' 'contexts', which writers such as Leys (2011) and Thien (2005) argue are missing or absent from accounts of affect. Rather than a pre-existing or surrounding frame in which

activity takes place, context can be rethought as extending, translating chains of material affects, which have varying durabilities. This can be explained by returning to Ley's (2011) critique of Connolly's (1999) account of laughter discussed in the introduction. Ley's suggests that laughter cannot be reduced to reflex, because this ignores the 'social-cognitive context' that shapes why one would laugh. An object centred account of affect would suggest that laugher is neither just a reflex or just a social-cognitive phenomena, because it would recognise that the capacity for reflexes themselves emerge from the construction of material relations and thresholds in the body that were created through previously translated affects.

An object centered account of affect also re-configures debates around the relationship between affective design (Ash 2012), authorship and interpretation. Whereas affect is often positioned as concept that is used to decentre humans as rational and intentional agents, it can also become a kind of ethereal field of potential that is seemingly beyond human beings control. In doing so, issues of affective design or manufacture become downplayed in place of an emphasis on the multiple ways that a piece of technology is used or interpreted by a variety of different audiences.

In this regard, Stiegler's work opens a helpful path between classic humanist positions that analyse technology as a means and end for human activity and post-humanism, which undermines the ontological difference between humans and technology that an instrumental account of technology is based upon (Badmington 2002, 2003; Wolfe 2010). While Stiegler is keen to argue that on an originary level humans and technology emerge in movement of "double constitution" (1998, 142), his later writings work to preserve a sense of particular individuals and companies who create technical objects to manipulate and organize consciousness for particular purposes (Stiegler 2011). Reading Stiegler, Simondon and Guattari alongside one another highlights that technical objects are both manufactured by humans as well as having a homeostatic autonomy from humans. Indeed the very process of manufacture is about creating the objects homeostasis so it can operate as a product or object at all. In this regard the question of intention or authorship over what an object can do becomes distributed between the designer and manufacturer as well as the associated milieu in which the object is placed. The affects' technical objects produce are informed by the intention of their designer and at the same time, the homeostasis of the object always has to exist alongside an associated milieu, which the designer or manufacturer has no control over. An object centered understanding of technical affect therefore

requires that one identify the material components that make up an object and frame its capacity to affect, as well as the environment or ecology in which the object is used or placed, which dictate that objects possibility for homeostasis. Analyzing technology in this way encourages us to think carefully about how the arrangement of these objects shape potentials and possibilities for different forms and ways of life. In relation to the example of tinnitus, one could use an object centered account of affect to study the technologies central to creating the inorganically organized affects that generate a tinnitus perception. This would raise a number of questions. For example, how are specific speakers and environments designed to organize and transmit airwaves? Furthermore, if these environments and objects are problematic for the humans that inhabit them, then can they be redesigned?

Taking an ecological view of technical objects and affects shows that affects can have afterlives that linger on long after the force of an encounter has dissipated. In many cases, it is the afterlives of affects that have the biggest impact on the beings exposed to them. It is hoped that the concepts developed here can be used to expand analyses of affect beyond an 'encounter' or 'event' centered model to focus on the temporal and spatial duration of affects as they emerge from and are translated by the objects and milieus within which they are enmeshed.

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