The City Soundscape and the Brain

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Abstract

This lecture has been developed at the intersection between two research frameworks: the Auditory Architecture Research Unit and Architecture of Embodiment, both at the Berlin University of the Arts. The first one is a platform devoted to develop a new conceptual approach to and new practices of architectural research and design based on the auditory experience. The second one is a research environment dedicated to establish an enactivist perspective of the build environment.

I have structured this paper in three sections. First I will briefly introduce the most relevant concepts of the enactive approach to cognition implemented in the auditory research and design of the environment. Second, I will present the outline of a research and design practice – the *auditory mapping* – developed in this conceptual framework. And in the last section, I will show the most significant results of the project "Klangumwelt Ernst-Reuter-Platz" as an example of a concrete case.

Keywords:

The enactive approach to cognition was formulated 1991 in the context of the *theories of embodied and situated cognition* by Francisco Varela, Evan Thompson and Eleanor Rosch in their book *The Embodied Mind*. Later, It has been comprehensively described by Evan Thompson in his book *Mind and Life* and developed by other philosophers such as Shaun Gallagher, Alva Noë, Dan Zahavi or Ezequiel Di Paolo. This cognitive approach provides a new description of the relationships between living beings and their environments that implies and, at the same time, produces a new understanding of these two items. In this context, living beings and environments are conceived as entities that are not pre-determined independently from each other and then, once individually established, come into contact with each other. Instead, their interrelationship –their interactions – are thought to be *constitutive* to each other. Living beings and environments, thus, are in a fundamental relation of *reciprocal specification*. The enactive approach concretizes this general view, already established in the field of ecology by Jakob von Uexküll, through the concept of *co-emergence*, specifying the notion of emergence as defined in the framework of dynamic complex systems. Living beings and environments co-emerge. They constitute one system, one closed network of relations, in virtue of which, and *just* in virtue of which, both are continuously specified. Environments and living beings emerge out of the *enabling conditions* they establish through their interactions, creating through their respective emergences *constraining conditions* for their mutual specification. The enactive account of living beings and environment is, therefore, radically *relational*, *processual* and *transformational*. It is radically relational, because the emergence of living beings and environments depends exclusively on the very particular connections both establish to one another. It is radically processual, because these relations change constantly in time, and furthermore, because living beings and environments, understood as emerging entities, are not the result of processes: they *are* themselves processes. And it is radically transformational, because theses processes are nothing other than a ceaseless modulation of their own course.

The process of the co-emergence of living beings and environments is also denominated in the frame of enactivism as a process of sense-making. This results from the idea that the co-emergence of living beings and environment implies the emergence of two senseful and eventually also meaningful entities: a self and a correlative otherness. The process of sense-making was originally formulated in transformational terms. According to this descriptive strategy, this process can be outlined as the transformation of living being and its surroundings into a self and its environment. In this formulation, the transition from a biological perspective to a phenomenological one, or, formulated in enactivist terms, the fundamental circularity between life and mind, finds a clear expression: due to the very spe-

cific form of relations between two items described in terms of their systemic topological, chronological, material and energetic interactions their phenomenal presence arises. The turn from a biological to phenomenological perspective implies the possibility of a change in the point of view. Although the third-person-perspective of biological description – the perspective of a third entity, a neutral observer non-involved in the observed situation – maintains its validity, a first-person-perspective is now possibleas well: the point of view of the emerging self. Furthermore, this new perspective is not only possible but also necessary. The presences emerging out of the interaction between living and non-living units arise primarily for the living being. Self and environment appear to the emerging self.

There are basic distinctions that can be made in the emerging sphere of the phenomena. There are, as Alva Noë posit, different varieties of presence. These distinctions are fundamental in order to define precisely what an environment is and how we can cognitively access the environment. The first and most relevant distinction is the one between objective and non-objective presences.

The self and the things around it appear as objects, that is, as clearly contoured presences, which allow a non-ambiguous differentiation between them and the rest. I can clearly differentiate between myself and others. I can clearly distinguish the table from the floor and the glass from the table. This objects are constituted primarily through perception. These are objects that appearto us, first and foremost, spontaneously and in virtue of our capacity to perceive. Among all emerging objects, the self appears as a very special and unique one. Although this distinction is fundamental, I am not going to address it in this paper. Instead I am going to face another fundamental differentiation: the one between objects and whole. This distinction can be outlined in two steps. First, the whole can appear as a container of objects. I – my self – and all objects around me appear as being somewhere, in a common space. There seems to alwaysbe a big container, in which we all interact. Although the contours of this container are less precisely defined than the ones of the objects it contains, we still can set its borders. The container, therefore, can be also objectified. It can also appear as an object. I, my books, my desk and my chair are in my office and I can clearly differentiate between my office and the corridor, other offices and the class room.

It is in a second distinctive moment, thus, attending to other qualities and forms of relations, that the difference between objects and whole can be established. All the objects I perceive – even those who are constituted by other intentional operations like judgement, association or imagination – share not only a containing topo-chronology – they all appear here and now – but also and more fundamentally the manner in that they all appear at once. They share not only a where and a when but most fundamentally a how. They all appear in a

very specific qualitativekind of simultaneity. They not only appear at the same time, but as coalescent presences or rather as presences sharing coalescent dynamics. Simultaneously to their single, objective presences they all appear as a whole determined not only by their synchronic presence in a common space but primarily by the very spontaneous dynamic coherence in which all they appear. They do not appear as a totality, as a simple group or addition of objects. They all spontaneously conform one single coherent processual presence. They all appear as one single senseful presence, as a subtle but pregnant presence that makes sense.

This dynamic, relational and transformational wholeness, which emerges out of the coherent and dynamic coalescence of all phenomenal objects but, as an emergent entity, can be reduced neither to any of them nor to them as a group, is what I call environment – Umwelt, the world around. The environment is not an object, it is even not a phenomenon, and therefore it is not perceivable. We do not perceive the environment but, nevertheless, the environment is present for us. The environment is not constituted by those noetic operations that constitute intentional objects. We do not perceive the environment but it is also not the direct result of judgments, believes, associations, imaginations, deductions or inductions. Places are invisible. Not because we can address them by listening and not by looking at them, but basically because they, although present, are as such non perceivable.

On this conceptual background I would like to present a research and design practice conceived in order to achieve cognitive access to the environment through the performance of different varieties of listening. We call this practice auditory mapping. The strategy underpinning this practice is defined as a pragmatic response to two of the basic ideas I already exposed. First: environment and listener co-emerge. That means, that they continuos and simultaneously emerge constituting conditions for their mutual specification. And second: the environment is not an intentional object. That means, that the environment is present for the listener but not perceptually. The listener can perceive conditions for the emergence of the environment but not the environment itself. The strategy that found the practice of auditory mapping correlate to the most primary strategy that underpins the phenomenological method: to gain detailed access to what is not perceptually accessible – in case of the phenomenology: the structure of intentionality and the process of phenomenal constitution – through what is perceptual accessible: the phenomenon itself – die Sache selbst. The practice of auditory mapping intends to achieve differentiated access to the sound environment, that is, to an environment co-constituted by the performance of different varieties of listening, through auditory objects, that is, perceptual objects, whose emergence is conditioned as well through the performance of various forms of listening.

As a base for this practice we have compiled a list of auditory objects possible to be constituted by listening in different manners. We have identified four varieties of listening: analytical, emotional, associative and imaginative listening. After characterizing in detail each of this varieties as concrete forms of action, we have identified those auditory objects that can emerge by practicing each variety of listening. Thus it is possible, for example, that we hear the time structure of a specific sound we have objectified in advanced, if and just if we listen analytically. It is possible to hear the level of differentiability between single objects, the grade of diversity of auditory phenomena or their general topological configuration if we listen as well analytically. It is equally possible that phenomenal objects like "oppressive", "delicate", "sweet", "boring" or "chaotic" emerge if we listen emotionally. And similarly objects like "my childhood in South England" or "a space for fruitful social interchange" arise if we listen respectively in an associative and imaginative manner.

The performance of the practice itself consists in the linguistic notation of all these emerging auditory objects, bringing them in relation to each other through their respective position on a surface, and recognizing their respective relevance in the emerging context marking it by changing their size in the emerging map.

According to this practice, to map an environment aurally means to engage adaptively with its process of emergence. What it is intended is to access the form the environment takes by listening, reflecting it through a minimal mediation: the realization of the map and the map itself. The arising map mirrors the emergence of the environment for the listener. It reflects, it bends the ongoing interaction between environment and listener backto the listener in order to make this interaction accessible for her as a geography of linguistic signs. Listening in this context is not understood as the apprehension of an outer reality and its representation in an inner mind but, in a noetic sense, as the performance of different perceptual actions all them focused on what emerges as listened, as something I hear, and, in a noematic sense, as a field of perceptual emergence, in which the environment can be accessible in a discrete manner.

I would like to present briefly a research and design project based on the practice of auditory mapping: Klangumwelt Ernst-Reuter-Platz (sound environment Ernst-Reuter-Platz). Ernst-Reuter-Platz is a square located in the West Berlin district of Charlottenburg, designed by Bernhard Hermkes and Werner Düttman at the end of the 60's. The whole ensemble is considered to be one of the jewels of the post-war modern architecture and is protected as architectural landmark.

The research of this square through auditory mapping made possible not only its detailed characterization, that is, its precise definition as object of architectural design, but

also the setting of the goals for its new design and the identification of the adequate means to reach them. I am going to outline the main traits of these three concerns.

The systematic and longterm auditory mapping of Ernst-Reuter-Platz presents it fundamentally as a space of circulation, whose most relevant qualities are dynamic, spatial wideness and transparence, counteracted by an oppressive homogeneity and a high level of non-differentiability. It appeared as a space of functional action, as a constellation of points of departures and destinations connected by lines of movement, traced by moving in this space as direct and straight as possible. The functional presence of the square block its emergence as network of sensuous and emotional qualities. Its pervasive functionality hinders its aesthetic presence.

This phenomenal configuration of the square, arising out of its auditory mapping, led to the determination of the goal of our design: the creation of conditions for the emerging of this square as aesthetic presence, that is as a dynamic network of sensuous-emotional qualities.

The same way that the goal of the design was set in contact with the environment though the practice of auditory mapping, the necessary means to achieve this goal were identified dwelling in the environment that was made accessible through the emerging geography of the maps. Without taking distance but, on the contrary, deepening it, three operations, three varieties of architectural intervention appear to be adequate in order to transform this square: clear, differentiate, and attract. The first operation – to clear – means to remove all those material elements that, without being a constitutive part of the original design of Hermkes und Dütmman, hinder the spatial wideness and the perception of the square as a radical space of circulation. Differentiate is the operation that should resolve one of the main problems of this square: its perceptual homogeneity. Since we perceive this place mainly as a space of circulation, circulation is the main object of differentiation. Through a fundamental change in the organization of the traffic, the perceptual, and particularly the auditory presence of the three forms of circulation in this square – cars, bicycles and pedestrians – will be clearly distinguished from one another. Once the space will be cleared and its homogeneity reduced through differentiation, it will be necessary to create points of perceptual attraction in order to deviate the awareness from the spots and lines defined functionally. We proposed, on the one hand, to reinforce the public activity of the margins of the square through a reactivation of the ground floors of the buildings located there and, on the other hand, to conceive and organize an international architecturalcompetition devoted to the realization of interventions in this space. This interventions should not be conceived to be themselves objects of attention but, accordingly to the goal of our design, create conditions

for its aesthetic emergence. As a concrete way to clarify the function of this interventions, we have designed a first example: an observatory to be installed in the center of the square – the so-called Mittelinsel. This observatory is a rectangular, transparent body absolutely acoustically isolated. The oscillation between the total primacy of the visual inside of the observatory, from which the dynamic presence of the whole square can be exceptionally regarded, and its auditory presence, reinforced through its temporal absence, constitute an effective strategy in order to reach the goals of our design: create conditions for the aesthetic emergence of the Ernst-Reuter-Platz

In this paper I showed how the concepts of sound environment and listening can be reinterpreted according to the enactive approach to cognition. Then, I described a research and design practice – the auditory mapping – conceived in this framework. In conclusion, I presented the basic traits of a research and design project – Klangumwelt Ernst-Reuter-Platz – realized based on this practice.

In this context, research is not understood as the generation of explicative artifacts about the object of research. Accordingly, design is not understood as the addition of objects onto a terrain, conceived independently of its transformative phenomeno-logic, that is the manner in which the terrain emerges as environment. Research and design can be conceived and practiced as two varieties of a single process of understanding the environment, as two slightly different but intimate interlocked forms of reflective engagement with it – our – emergence.