[^] Phenomenological Study into Perception of "the Real" and "the Virtual" in Computer-mediated Interactive Environments

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> Architecture is accepting computers as a feature integral to both the design process and the spaces of our everyday "Being-in-the-World". This acceptance is resulting in many changes and expanding forms of interaction within architecture, which, supported by the ever increasing speed of technological changes, is over taking many other design issues.

> This paper will talk about the intimate relationship' between humans and their living space, and will plan an experimental, computer-mediated space, which will challenge and redefine the method we currently use to understand space.

> Creating this computer-mediated space, by incorporating 3D computer-generated environments into an architectural space, will set up an arena in which to test the human-space relationship and the way space, itself, is understood.

> In a way it is an attempt to impose order on different characteristics shared by both (digital and architectural) spaces in this arena. This order will be borrowed from the orders we use to perceive, understand and make sense of anything, whether this order is bared on logic, mental models or imagination.

MOTIVATION FOR THIS STUDY

This experiment will be designed using philosophical concepts discussing the ontological stand of being-in-the-world,² and the phenomenological understand-ing of this world or space.' The computer-generated environment will be designed borrowing definitions from Gaston Bachelard's book "The Poetics of Space," and will be utilised to examine the "Consciousness" of our daily life as designers and users of space.

The meaning of space, which defines and reflects its characteristics, will be used as a narrative to construct the discussion. The narrative (space) will be explained, investigated and evoked to further the discussion. This will start with the different meanings that form the account of meaning held by this narrative, and its metaphorical structure. Both will disclose the phenomenological understanding of our narrative, which will lay down the foundation for interaction. The narrative will be examined, as well as how the result might be related to our "Being-in-the-World". The philosophical concepts of the relation with space will then be discussed to enhance our understanding and provide a base for another loop in our conception.

CONSCIOUSNESS

Through reading Merleau-Ponty, consciousness can be defined as a state of being-in-the-world in which we assign meanings to objects beyond the actual properties perceived by our senses. Any sensory data is a perceived data that complies with a system of perception, with which the body can sense phenomena in the world and assign meaning to it. The projection of ideas and experiences is a key attribute of consciousness.*

According to Merleau-Ponty, "Our own body is in the world as the heart is in the organism." In other words, our embodiment in the world constructs physical interaction because our recognition and interpretation of this interaction is embodied. Our bodies are implicated in our experiences.

The interaction of our bodies with other objects is the generator of our experiences which is the general frame for our conscious actions. The background of this frame is perception. We use our perception to perceive this vast field of objects that surrounds us, being aware that, in turn, we are being perceived as objects by others.

Descartes had asserted that "an object is all that which can be defined by a certain shape: something which can be confined by a certain place, and which can fill a given space in such a way that every other body will be excluded from it"." Thus, space is an attribute of objects, which can be divided into numerous subdivisions, such as "Spatiality of situation".' This attribute, we will be looking at later, is an essential notion to the construction of the argument and development of the understanding of the body's attitude in its interaction with space. Before discussing the body's interaction, we need to clarify the notion of space.

SPACE AS A NARRATIVE

The Oxford English Dictionary defines space mainly as:

a) Denoting time or duration, b) Denoting area or extension

"Metaph. Continuous, unbounded, or unlimited extension in every direction, regarded as void of matter, or without reference to this. Freq. coupled with time."

Space is frequently coupled with time. The definition of time is:

a) A space or extent of time. b) Time when: a point of time; a space of time treated without reference to its duration:

"A limited stretch or space of continued existence, as the interval between two successive events or acts, or the period through which an action, condition, or state continues; a finite portion of 'time' (in its infinite sense: see 24), as a long time, a short time, some time, for a time."

Space is arguably a narrative device referring to the human physical being (embodiment) as perceived, memorised, and projected with relation to time, which constitutes an ontological setting in which our lives unfold. Its aim is to provide a coherent, systematic account of meaning for our perception and a platform for investigating all aspects of being in all other forms of existence that may help in understanding our existence and add to our knowledge.

In order to understand the "existential spatiality" of the body, we have to understand the structure of its being or existence. Philosophy tends to draw on many dichotomies. Rationalism, defended by philosophers like Descartes, Spinoza, and Leibniz who believe that the source of knowledge is reason, and Empiricism, introduced mainly by Bacon and supported by Locke, Berkeley, and Hume, argue that the source of knowledge is mainly through the senses.

Kantian philosophy, acting as a critical philosophy, introduced what was thought to be a comprehensive theory to combine, more to criticise, the previous theories by introducing apriori / apostoriori sources of knowledge. This philosophy pushed Idealism forward by retrieving Plato's metaphysics. Idealism was developed from Kantian philosophy by Fichte, Shelling, and especially Hegel who developed what was called Hegelian Idealism and what he called Metaphysical Idealism.¹⁰

Phenomenology took its present shape at the beginning of the 20th century with the writings of Edmund Husserl. He intended to develop the "science of Phenomena", a method that was devoid of all presuppositions.

"It makes no difference that phenomenology has to do with "consciousness", with all types of experience, with acts and their correlates; though in view of the prevailing habits of thought, it demands no small effort to see this." His aim was to set aside the natural attitude of experience.

... in addition to all other adjustments a new way of looking at things is necessary, one that contrasts at every point with the natural attitude of experience and thought. To move freely along this new way without ever reverting to the old viewpoint, to learn to see what stands before our eyes, to distinguish, to describe, calls, moreover, for exacting and laborious studies.

His mean to achieve this was his method of "Phenomenological reductions" ... we may set aside the limitations to knowledge essentially involved in every nature-directed form of investigation, deflecting the restricted line of vision proper to it, until we have eventually before us the free outlook upon "transcendentally" purified phenomena, and therewith the field of phenomenology in our own sense of the term.1

Heidegger developed Phenomenology. He expanded and refined its applicability. He proposed "Dasein"14, [literally "to be there"] or being, existence as a conscious body. Heidegger explains the entity that exists in its time: "Dasein is the entity which I myself am in each instance."" He suggested that we need to understand the essential structure of "Being-in-the-world" to achieve a proper account of meaning for its spatiality, and tried to analyse it from an ontological point of view, from the point of view of this entity. The fundamental character of Dasein, which is 'to be it in its each particular instance (of time),' must be maintained, therefore the first step will be to let this character be derived from Dasein itself.

Computers introduce an interesting mode of interaction using a metaphorical world of space, and entities occupying it. As users of this metaphorical space we are familiar with it, but familiarity does not provide a strong connection between both Virtual and Real modes of space, i.e. not enough to describe our interaction with this space. The connection between these two modes is more of a relationship in which the consciousness of the user is highly augmented in terms of sensory data perceived from objects in their environment, and from relationships between these objects.

The users' physical presence is reduced and moved into the hardware: their recognition is suspended and their interaction is no more a response to their immediate environment, but instead to their embodied being. This argument not only suggests a similarity between the way our bodies interact with spaces, virtual or real, but also a hypothesis that both utilise similar approaches and are founded on the same idea. As proof for the similarity, I will argue that our understanding of space is based on a conceptual knowledge which is a characteristic related to our being. This capability uses our senses and cognition to build mental structures and apply them to similar situations. Space in this context, becomes a narrative.

ACCOUNT OF MEANING FOR THIS NARRATIVE:

The perception of senses of the body affects and shapes what is perceived by the mind, and changes the account of meaning of objects perceived. In other words, the senses of the body determines the kind of sensory data used to describe perceived objects. This changes the image of the object in our mind. Reasoning, on the other hand, creates different meanings and

Gaston Bachelard, in his book "The Poetics of Space," examines the way our perception of our intimate space shapes our thoughts, memories, and dreams. Though he used poetry, and sometimes folktale, to shape his argument, and analysed these using psychology, they were only tools that he utilised to point out the hypothesis he was wishing to define. His argument had two directions. The first tried to prove that bodily experience, not only mind, is the memory keeper of space, and the second was a metaphorical one. This second

argument was that the house is the first cosmos" of its inhabitants, thus, is the point of reference of their understanding for all other spaces. This phenomenological understanding of the primary world view (cosmos) creates the account of meaning of this cosmos. This account of meaning shapes the subsequent knowledge of other spaces of any larger cosmos. These two ideas work as a bridge connecting the rituals and habits that develop the intimacy to space, with imagination of our spatial experience. Though the basic description of space is based on bodily or spatial element, this tends to dissolve into habits and actions of everyday Being-in-the-world, and this level connects to Heidegger's description of the existential character of human space, yet with his rejection to the presupposition of a spiritual element to human being.

The only resonance we can find in Bachelard's Poetics is in the notion of changing one's nature. According to this notion, a real space and a virtual space are the same in the way we understand and analyse. A real space is a space of our usual sensibility, and changing this space introduces a new innovating space. Thus, a virtual space is a physically innovating space. Although the state of consciousness is the state often used to describe physical awareness of Beingin-the-world, altering this state or changing the consciousness of certain relationships established in our minds and projected onto our environment is the key to define the level of reality of a virtual environment.

METAPHORICAL STRUCTURE OF THIS NARRATIVE

The meaning of Space's metaphorical structure, or our understanding of this structure, which operates at a deeper level of our reasoning, is based on an Image-Schema." The notion of Schema is defined as "a cluster of knowledge representing a particular generic procedure, object, percept, event, sequence of events, or social situation. This cluster provides a skeleton structure for a concept that can be "instantiated," or filled out, with the detailed properties of the particular instance being represented."18

Using an abstract conceptual and propositional event structure, as a first step, would be the most appropriate definition that would help in using this schema for our narrative. The second step would be to project this definition onto this narrative space to test its structure. Why is this the case? We understand the notion of space, with its relation to time, as a sequence of events. Therefore, these events exist in space, and in time and, in order to be understood, must be fitted into a structured frameworks or schemata that, in its totality and with other different schemata, acts as the means by which we organise our knowledge of our Being-in-the-world. In other words, if we want to understand our daily interaction with space we will need, according to the above definition, to view this interaction from the point of view of a subject who is looking at himself as an object. The key objective, therefore, is to separate the subject from his 'space of surroundings', to change his perception of his relationship to space, and concentrate his consciousness on the separation, so that they are no longer attached anymore; rather the subject will view himself as separate object. Indication of this detached relationship can already be seen in our use of the third person, when sometimes, we, for example, talk to ourselves, "what a stupid thing to do," or "well done for this one", and so extending this to other situations is not outside the realms of possibility.

When we do achieve this separation we can be left with a broken loop, as there is no immediacy between the action and viewing of the action. In order to avoid this broken loop, I propose to have two image schemata, or two structures of events. The first is the self as constructed spatially in the phenomenon of the home vs. the second as the self as constructed through digital media projection (i.e. The "Virtual").

The subject would view his objectivity in the virtual schemata. Drawing on the power of metaphor, we can examine the gap between the two schemata, provided that we can alter the subject's consciousness, which is a further requirement of this proposal. The two image schemata share similarities, but to the schemas we need to project the virtual image schemata onto the actual

This will be smoothed by an animation that the subject interacts with. This interaction continues until the virtual overlaps the real, and at this point the account of the meaning of the schema will be reconfigured, and both spaces will be unified. This leads to an "augmented reality", and a new border will be blurred or the difference will be smoothed. The subject will be the object for himself and the subject of his objectivity.

This can be summarised by saying that on the level of our bodily

perception, our understanding of our experience is based on a sequence of events that work as organising structures. If we try to experience something which is unreal, we have to alter our consciousness or change our perception of the relationship between certain objects and establish a sense of similarity or familiarity, drawing on the strength of the metaphoric relations between image and space.

ELEMENTS OF THIS STRUCTURE

A metaphor pictures the relationship between two objects using the connection of identity. Another connection, that might be found, is based on the inference to physical objects upon their likeness or their geometrical necessity.¹⁹ For an example, notice the two expressions used above. "A metaphor pictures the relationship," and "another connection is based on Inference." The first is a metaphor that tries to make two realities identical, while the second tries to describe the relation between perceivable objects using a ready model that is common among its users.

These two approaches could be considered conflicting. Kant argues that the:

...matter of experience is given as sensation to the mind; sensations are purely subjective; the matter of experience exhibits only sequences and no necessary connections.31

One advance on this would be to look at the two spaces, the space and the image, and the resulting "augmentation" that occurs at their blending. Space is unable to signify anything beyond its own reality, and it is, therefore, necessary to overlap it with its virtual representation to reveal its relationship with what it stands for. The representation is visual, and vision is a language. Therefore, this representation can be used to communicate information and to trigger emotions and actions. The Metaphor is the key to disclose new angles on our experiences. These experiences will include the same sensory data for two different objects. Yet, in perceiving the relationship between these two objects, rather than triggering two very different responses, will reveal that our relationship with these two objects hold many similarities.

PHENOMENOLOGICAL UNDERSTANDING OF NARRATIVE AND THE INTERACTION WITH IT

Familiarity of object (space) and its associations is not enough to assure that the subject of this experiment will play his part (and here I use the term play as if the experiment will be a defined set of actions to be performed by the user whilst immersed within the environment, or space); we must be aware that the subject of the experiment will be able to make distinctions between what is real and what is unreal (virtual, computer-generated, etc.). This determination of whether something is real or not is a judgment based on perception. Merleau-Ponty argues, that a perception of a relationship between:

- · one object and another,
- one object and a memory of an experience whether related or unrelated to the object,
- · two experiences that are related,
- · two experiences that are not related,
- and two metaphors as a second level of relationship.

is neither purely sensory, nor the processing (reasoning) of facts. The decision of whether something is real or not is down to logical processing of perceptual senses, or perception of a relation between objects. Space, our narrative, appears to us as an element of perception. Thus, we can categorise it as an element of our human experience. Consciousness is a state that includes both sensing and reasoning. This state will result in many experiences stored in our memory. For Empiricists, it is only the pure sensual experience that decides and gains our knowledge of every other thing in the world. For Rationalists, it is only reason that decides and gains our knowledge.22

Altering consciousness implies an absence of analysis of sensory input and increased reception of unfiltered sensory input. This, in turn, would help to highlight different sides of reality that are usually overlooked. These previously overlooked aspects of reality could trigger the understanding of time in a different manner (active participation and interaction), and could change the perception of space itself, perhaps making these perceptions hyper real in comparison to other 'real' objects. This should result in an increased immersion in the surrounding environment (real, hyper real, or virtual).

A Phenomenological Study into Perception



Fig. 1: Screen shot of a 3D computer model created in 3D Studio, for Navigation.



Fig. 2: Screen shot of Macromedia Director



Fig. 4: Image of a closed window projected into the wall



Fig. 4: Image of an open window projected into the wall

PRACTICAL WORK

This exercise will explore the borders of our perception and imagination using a computer mediated environment (Augmented Reality) that activates our senses.

To instantiate Bachelard's spatial narrative as a 3D computer model (fig. 1) available for computer navigation and interaction introduces some startling incongruities. As users of this new space we sense a familiarity with it, though we are perhaps struck by the mismatch between the virtual nature of the medium and our bodily awareness. Our physical presence is perhaps reduced and moved into hardware and software. Our sense of recognition is suspended and the spatial phenomenon reduced to concepts of digital interaction.

The medium of Macromedia Director's Shockwave 3D²⁰ (fig. 2), due to Shockwave's standard specifications and the increased computational power of the average PC, exposes a series of 3D animation strategies and a real-time physics simulation engine (Havok).

This Shockwave 3D environment works with concepts of the model, movement, interaction and frames. It is possible to "jump" from one frame to another. It is also possible to overlay frames. The frame metaphor is extended to a consideration of a room in the Architecture building¹⁴, data projecting a window as presented in the Shockwave 3D "attic" space onto a window in the room (fig. 3). The actual window is covered by a screen and an open window is projected (fig. 4 & 5).

The projected transparent visual realm animation will allow users to interact directly with their environment, drawing on the power of metaphorical association between the image (projection of a window) and the surrounding physical space.

Different interactions are available, such as opening the virtual window or closing it, or opening a blind simple prototypical micro-event that we may have performed many times before, and that frames our experience and structures our space for the moment.

This project highlights issues of familiarity, interaction, augmentation, the virtual, narrative and metaphor. A phenomenological understanding of such interventions helps to develop an understanding of digitally mediated spaces. Users' responses on all levels will be important. The emotional level of these responses will decide the degree of their awareness of the augmentation of the space. On a different level, the way they respond, verbally after using the space, will represent the way they are using this space from a psycholinguistic aspect. Narrative is a way of authorising ourselves, and the space as a language can be discussed in the same manner.24

The familiar, homely event of opening a window is rendered strange, and consequently gives us a new understanding of the spaces we inhabit. The next challenge is to test this interaction with subjects to see what narratives of augmentation (metaphors) emerge. The task will then be to examine multi-user interaction in the same space, to see how such experiences are negotiated collectively, and through digitally-mediated communications.



Fig. 3: Section in the 3D model showing the "attic" and the projected picture onto the wall

NOTES

- 1. Bachelard, Gaston 1964. The Poetics of Space, trans. Etienne Gilson. (Boston: Beacon Press. First published in French in 1958).
- 2. Heidegger, Martin. Being and Time. Trans. John Macquarrie and Edward Roinson (Southampton)
- Basil Blackwell 1988). (First published as Zein und Zeit in 1927). 3. Mericau-Ponty, Maurice. Phenomenology of Perception. Trans. Colin Smith (London and New York: Routledge Classics. 2003), p. 235
- 4. Ibid. PP. 77-171
- 5. Ibid, P. 235
- 6. Wilson, MD, cd., The Essential of Descartes (Mentor Bk: New American Library, 1969), p. 172 7. Merleau-Ponty, Maurice. Phenomenology of Perception. Trans. Colin Smith (London and New York: Routledge Classics. 2003), p. 114
- 8, Oxford English Dictionary, Second Edition 1989 http://www.ocd.com/. I only mentioned the first and the second categories, i.e. a) and b), as the third category, i.e. c) attributes and Combinations, is not important for my discussion. The quoted meaning can be found under number seven (7), Metaph. stands for Metaphysical.
- 9. Ibid. I only mentioned the first and the second categories, i.e. a) and b), as the third, fourth, fifth and sixth categories, i.e. c) In generalized sense, d) Phrases, e) Elliptical, and f) Combinations, are not important for my discussion. The quoted meaning can be found under number one. a (L.a).
- 10. Russell, Bertrand. History of Western Philosophy (London and New York: Routledge Classics. 2002).
- 11. Husserl, E. Ideas: General Introduction to Pure Phenomenology: Trans, W. R. Boyce Gibson (London: Unwin Brothers, 1931), p. 42 12. Ibid. P. 43
- 13. Ibid. P. 43
- 14. Heidegger, Martin. Being and Time. Trans. John Macquarrie and Edward Roinson (Southampton: Basil Blackwell 1988), p. 83
- 15. Heidegger, Martin History of the concept of time, (New York: Indiana University Press, 1985), p. 152
- 16. According to The Oxford English Dictionary, Cosmos is: 1. the world or universe as an ordered and harmonious system. b. transf. An ordered and harmonious system (of ideas, existences, etc.), e.g. that which constitutes the sum-total of 'experience'. 2. Order, harmony: the opposite of chaos. transf stands for transferred sense.
- 17. Johnson, Mark. The body in the mind: The Bodily Basis of Meaning, Imagination, and Reason (Chicago The University of Chicago Press, 1996), p. 72 18. Ibid. P. 19
- 19. Turbyne, Colin Murray. The myth of Metaphor (Columbia: Univesity of South Carolina Press 1971), p. 107
- 20. Welch, Parl. The Philosophy of Edmund Husserl. (New York: Columbia University Press 1942), p. 231
- 21. Turbyne, Colin Murray. The myth of Metaphor (Columbia: Univesity of South Carolina Press 1971), P. 107
- 22. Merleau-Ponty, Maurice. Phenomenology of Perception. Trans. Colin Smith (London and New York: Routledge Classics. 2003), pp. 30-60
- 23. Macromedia Director MX, Macromdia, Inc. 1984-2002. http://www.macromedia.com/
- 24. Architecture Building, (Minto House), School of Arts, Culture and Environment, University of Edinburgh
- 25. Words used in language can express how we perceive things (i.e. visually orientated people will say 'I see' and 'Picture the scene ...', while audio orientated people will say 'I hear what your saying', 'it rings a bell', and 'Have you heard the news?', These responses translate human perception of space, 'space as a language'.