Understanding Virtual

Moving Design Ideas Among Four Modes of Being

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Since the introduction of terms like "cyberspace" and "virtual reality", the term "Virtual" has been attached to a range of projects including using computers to draw buildings, distributed studio projects and heavily technologically dependent interfaces for "sensing" digitally modeled environments. The only common aspect of these "virtual" projects is their use of computers. As a way to re-infuse meaning to the term Virtual, the paper describes a theoretical basis for understanding the meaning of being virtual (as opposed to being "Real, Actual" or "Possible") with special attention to the manipulation of ideas as is the case in designing architecture.

Virtual Reality; Design Theory; Virtual Systems

Becoming Virtual

As many have noted, Virtual Reality is a term, which appears to be a contradiction in terms. (Negroponte 1993). The use of the word "virtual" has become so widespread as to render its use almost as meaningless. The use of the term "virtual" has almost become synonymous with the word "digital". Virtuality is almost more of a selling point than a description. As Leach writes, "In the age of MTV and Pop Culture, one must be brave to turn your back on seduction." (Leach 1999). The theoretical framework put forward here, attempts to redefine virtuality by placing it in a precise and recognizable framework.

The following draws upon the "Ontological Quadrivium" described in "Becoming Virtual" by Pierre Levy (1999), which in turn is based on writings by (Deleuze 1968). Levy's Quadrivium describes four states of being: Possible (or Potential), Real, Actual and Virtual. Levy investigated what it meant to move between two sets of Modes: Real / Potential and Virtual / Actual. Real and Potential belong to the pole of manifest things while Virtual and Actual belong to the pole of events. The demarcation between the two pairs is defined by the scale of time chosen. In Levy's Quadrivium, Movement is between the Real and the Potential or between the Actual and the Virtual.

By removing time from the definition of the four modes, it is possible to consider movement between any pair of the modes. That is, instead of 4 Transitions as described by Levy, there are now 12 Movements (groups of three each allocated to each of the four transitions). A Movement describes how a design idea or notion (named the Token) moves from one mode to another. Time is not altogether removed, but is, in effect, transferred to occur during the Movements. A way to understand this is to consider water. The modes are analogous to the states of water (solid, liquid, gas) and the movements to the transitions between them (freezing, melting, evaporating, condensation).

The four modes are defined according to a matrix of realms. The matrix is defined by an axis between atom and bit as well as idea and representation. This matrix describes how the design token is passed between the modes. The Potential and the Real are Ideas; the Actual and the Virtual are Representations. Similarly, the four modes can be divided into two other pairs: Real and Actual modes are Atom based; the Potential and the Virtual are ephemeral (Bit modes). The movement of a design token describes the various processes that are part of "creativity". See Figure 1.
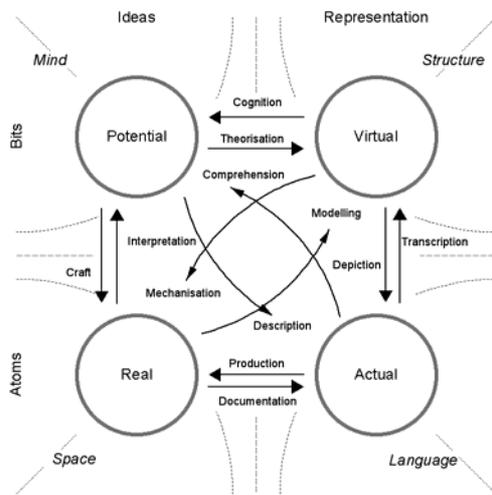
Figure 1: Special Quadrivium

In this system, the movement of an idea almost always originates in the mind. From the Mind (the Potential mode), the Token moves from a Bit/Idea to the Real, which is an Atom/Idea. This is called Craft. Complex objects requiring more than one set of hands to be completed or built need to be documented in order to be realized. That is, the design token must first move from the Potential to the Actual (a Representation of the object: e.g. drawings) and then to the Real (the Atom-Idea). In this example, the Movement called Craft is achieved through the two movements of Description (producing drawings) and Production (producing the final object). Indeed, it is possible to codify any part of the design process as being a sort of "Token Algebra" describing the movement of the Token among the four modes.

Virtuality, according to this system is a Bit-Representation. The Potential (Bit-Idea) can be considered to belong to the realm of Mind; the Real (Atom-Idea) to the realm of Space and the Actual (Atom-Representation) is in the realm of Language. The Virtual (Bit/Representation) is in the realm of Structure. That is to say, being in the virtual mode does not necessarily imply being in a binary computer. Rather, it is a state of ephemeral structure: inaccessible to the Mind. The Virtual is accessible as a representation, but only through the Actual. Virtual to Actual is the Movement called Depiction. In the Actual Mode, the Representation is no longer in the realm of Bits, but in the realm of Atoms. From the Actual, the Token can be passed to the mind (the Potential) by way of the Movement called Comprehension.

Virtualization is not just a single process, but a general one encompassing three distinct Movements: Theorizing, Modeling and Transposition. According to the initial stating point of the movement, the virtualization has a different meaning. This allows a reconciliation of an overused term such as the "virtual city". Here, the use of the term "virtual" must be made clear as to whether the virtualization is a theory, a model or a digital representation.
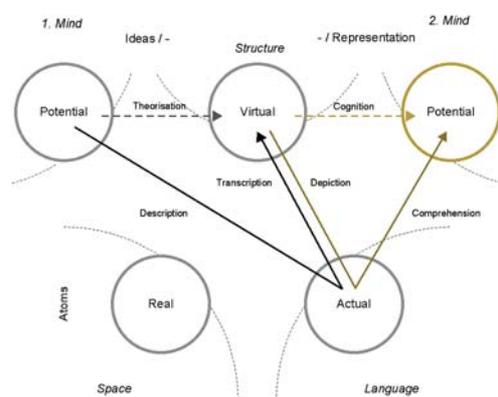

Figure 2: Movements between Collaborators

Virtual Minds

The special Quadrivium explains the design token and its movements for a single person. However, for another sentient being, the "Virtual" is in fact the "Potential". The mind of another person is as inaccessible as the structure of a binary computer. In the Quadrivium, they are essentially the same. Thus, the system can also explain the way ideas move between the various modes among different creators. (See Figure 2). This implies and overlaying of the Movements, according to which person is observing the Movement.

In collaborative work, a person will describe an idea through the Movement: Description.

The Token is in the Actual and can be read or seen by another person. The second movement is called Comprehension for the second person. However, for the first person, this is called Transposition. The difference between Comprehension and Transposition lies with the beholder. The reciprocal Movements (Description/Depiction) are similarly overlaid. What is interesting is that the net dialogue between the two persons is Theorizing and the Cognition.

The framework described allows taxonomy of "Virtuality" according to the mode of the alleged virtual system or the type of movement it implies. The Design Token movement, as would be carried out by artists, architects and digital designers, is almost always intended to have the Design Token end up in the Real. The Token algebra means that the act of Craft, which is usually attributed to just "artists", is the net result of a host of Token movements. The system serves as a neutral framework against which all kinds of creative work (and not just "virtual" ones) can be measured and analyzed.

The system has the drawback that it can be considered to be ontological. However, by providing a precise difference between various types of creative acts, it allows a precision to enter the discussion about virtuality. The importance of this is not to be negated. For example, physicists use the physical terms "Work", "Power", "Energy" and "Force". These words are interchanged in daily use, but have definite meanings when discussed by the physical sciences community. By establishing precise meanings to words like "virtuality" and "virtualization", the debate and discussion can move forward.

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