

Chapter 2

A Short Exploratory Essay on the Term ‘Cultural DNA’ from the Perspectives of Physical and Virtual Architecture

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Abstract Today, information sharing is faster than ever. From this, we face fragmentation of information about ourselves in virtual spaces such as in online communication, social network, and storage services. A problem we face today is that because the locations of our behavior spaces are integrated that sometimes we get lost in our own virtual behavior spaces. In this exploratory paper, in order to find ways to ameliorate the segmentation of behavior spaces, we attempt to identify how virtual spaces can become more manageable at a human scale by making analogies between physical and virtual architectural components. To investigate what kind of components should be considered in physical space and how spaces have evolved in different countries to the modern times, and onto virtual spaces, we apply the concept of cultural DNA into account. We first clarify what cultural DNA is by organizing the ideas of many scholars; make our own definition of cultural DNA in design field; apply the definition to physical architecture, and finally end with making analogies between the physical and virtual architecture.

2.1 Introduction

With fast information transmission occurring today, we face fragmentation of information about ourselves in virtual spaces such as in online communication, social network, and storage services. These information transmission platforms can be considered as one of a behavior space where social interactions and transmissions of information occur. A problem we face today is that because the locations of our behavior spaces are integrated that sometimes we get lost in our own virtual behavior spaces. For instance, people have accounts in Google+, Facebook, Instagram, Twitter, Pinterest, Kakaotalk and WhatsApp mostly for information sharing and socializing.

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With so many behavior spaces, sometimes people forget where they have posted their picture; where they got the information; and in effect, they have difficult times retrieving the information when wanted. So far, one of the ways to deal with fragmenting behavior spaces was to integrate all services where information in Google+ synchronizes with Pinterest, and the information in Instagram synchronizes with Facebook. However, in this paper, we take a rather different approach. Instead of making the services all share the information about the users which sometimes gets out of control because the spread of information is fast and not stoppable, we suggest dividing up behavior spaces clarifying what sort of information is shared in what sort of spaces given that we have done so in human history.

Before the online communication and social network services in virtual spaces, physical spaces—and still today, just not as much—act as a behavior space. In terms of social spaces in buildings, people generally gather and communicate in rooms that are large in area, are located in the center of the buildings, and sometimes, have high roofs. In terms of private spaces in buildings, people generally talk in small groups or take care of personal business in rooms that are small in area, and are located at the edges of the buildings. One of the reasons why the behavior spaces in physical architecture are easier to identify and to deal with is because the spaces are visibly separated where the boundaries between spaces are clear. In other words, the function and the form allow people to identify how to occupy the space and what kind of information to share. Without such clear boundaries and clear coupling between form and function in our virtual behavior spaces, the users of the net will continue to face fragmentation of themselves in numerous spaces.

In this exploratory paper, in order to find ways to ameliorate the segmentation of behavior spaces, we attempt to identify how virtual spaces can become more manageable at human scale by making analogies between physical and virtual architectural components. To investigate what kind of components should be considered in physical space and how spaces have evolved in different countries to the modern times, and onto virtual spaces, we took the concept of cultural DNA into account. Currently, however, the concept of cultural DNA in the design field is yet to be concretized, although the notion has been clarified in the psychological field. In this paper, we clarify what cultural DNA is by organizing the ideas of many scholars; make our own definition of cultural DNA in design field; apply the definition to physical architecture; and finally end with making analogies between the physical and virtual architecture.

2.2 Literature Reviews

2.2.1 *Cultural DNA*

There is a need to clarify what cultural DNA is. When cultural DNA is explored, many different keywords appear in a non-hierarchical manner making it difficult to understand what it exactly is, as shown in Fig. 2.1.

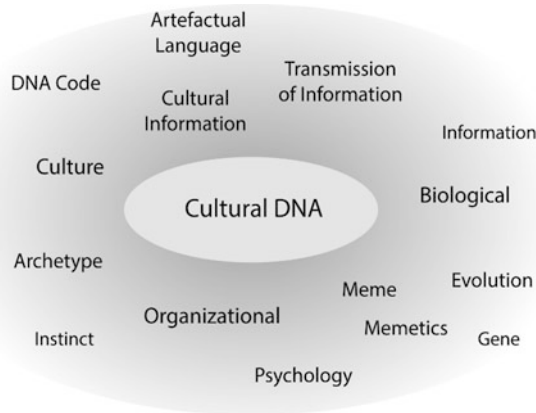


Fig. 2.1 Cloud of keywords related to 'Cultural DNA'

When the literatures are reviewed, the term, cultural DNA is perceived from two different fields: organizational and biological. The exact term, 'cultural DNA' has actually been identified from the organizational point of view. It begins with a strong foundation of in-depth studies of culture by one of a renowned social psychologist, Geert Hofstede. His research offers a chance to learn about cultural differences and their impact in our society. In his book, *Cultural Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations* (2001), Hofstede presents a research work where he collected the data from a multinational organization, IBM in 72 countries by surveying twice around 1968 and 1972 producing more than 116,000 questionnaires. From this research, he identifies five dimensions or factors—power distance, uncertainty avoidance, and individualism, and masculinity/femininity, long-term and short-term orientation—that affect human thinking feeling, and acting, as well as organizations and institutions [1]. When looking at the five dimensions, it is evident that research is from the perspectives of organizational management. Following this research line, very recently, a book entitled, *Cultural DNA: The Psychology of Globalization* (2015) by Gurnek Bains has been published. In this book, the author makes a point that the idea of DNA in his terms comes from work in the area of an organizational culture. Under this stance, the author applies this type of DNA analysis to eight of the world's cultures which he lists as Subsaharan Africa, India, the Middle East, China, Europe, North America, Latin America, and Australia. Bains mainly uses primary data accumulated over 25 years of working as CEO for the psychological consultancy YSC, which has 20 offices globally covering the eight regions mentioned above. The consulting company also systematically assessed 30,000 people working in a range of organizations across the world for forming a hypothesis about cultural differences. The main reason for his research is to find out why such differences exist in the first place. There have been a number of researches written about cultural differences, but why. Overall, he covers cultural differences in the

psychology of people in the regions from an organization and business point of view [2]. As can be seen, extensive researches that investigate what culture is and what causes cultural differences are from the psychological and sociology field.

From the biological field, by making an analogy with genes in genetics, an evolutionary biologist, Richard Dawkins (1976) introduced a term, meme as a unit that carries the cultural information copied from person to person by imitation [3]. From this idea, memetics community was formed where the concept of a meme has been used in fields such as evolutionary theory, religions, and myths, and been explored for its concretization [4]. For example, a psychologist and memeticist, Blackmore (2001) claims that the theory of memes plays a more fundamental role in understanding how and why human brains evolved differently from other species. The central argument that Blackmore makes is that memes “appeared in human evolution when our ancestors became capable of imitation” and “from this time on two replicators, meme and genes, coevolved” making humans produce and understand language, songs, dances, and other cultural activities [4]. However, according to Edmonds (2005), the study of memetics was a “short-lived fad” where too much abstraction and over ambition caused obscuring of fields [5]. Edmonds illustrates the fad of memetics in academics using a trend graph shown in Fig. 2.2.

As illustrated, the number of papers mentioning ‘memetic’ increases and decreases at fast rates with the year 2002 as its peak. However, the central idea of memetics that cultural information is copied from one person to another evolving throughout human civilization also referred to as the cultural evolution is becoming more concrete. As Distin (2011) mentions, “although a burgeoning optimism about cultural evolution is

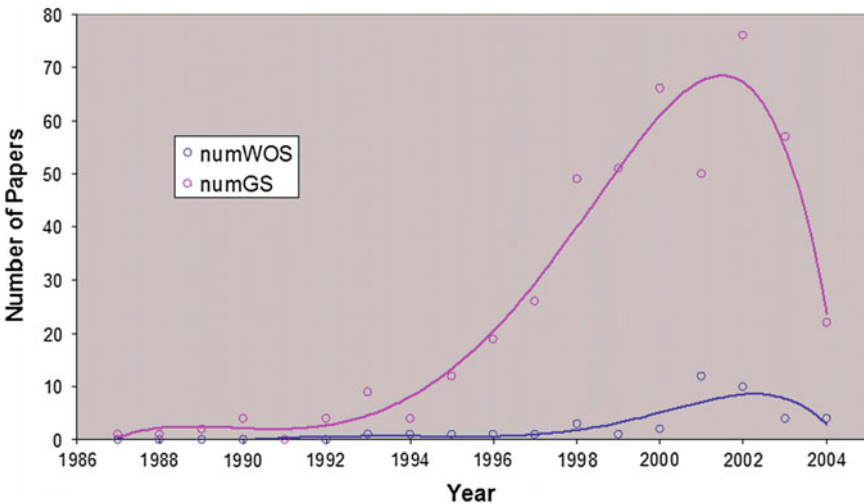


Fig. 2.2 Number of papers mentioning “memetic*” (but not “memetic algorithm*”) each year according to Google Scholar (numGS, pink circles) and on the ISI’s citation index (numWOS, blue circles). Lines are 6th degree fitted polynomial trend lines of the respected series (Image taken from [5])

detectable across a variety of disciplines, memetics has been widely criticized and perhaps even more widely misapplied to a variety of irrelevant subjects” [6]. In fact, Distin explicitly mentions in her book, *Cultural Evolution* (2011) that she didn’t use the word ‘memetics’ throughout the book because there are people who are in the habit of dismissing works with the word ‘memetics’. In the book, Kate Distin introduces the concept of artefactual languages which are artifacts made by humans such as writings and musical notions. Her basic idea is that these languages help humans to receive and transmit cultural information thus the evolving of the culture. She also suggests how understanding such artefactual languages help scholars understand the origin and development of human culture [6].

In this paper, Kate Distin’s concept of cultural evolution is adapted to define what cultural DNA is. If artefactual languages carry the cultural information evolving as humans receive and transmit the information, and if the complete forms of artefactual representations are composed of units or components, then the notion of DNA in the term ‘cultural DNA’ can equal the units or components of these artifacts.

2.2.2 *Architecture as Artefactual Language*

From a very abstract notion of the meme, and to a more concretized definition of how cultural information copies from one person to another through artifacts, we can start to identify the cultural DNA of physical spaces by considering architecture or buildings as the complete forms of artefactual representation. In fact, theoretically and philosophically, buildings are artefactual symbols that store and manipulate the excessive cultural information of human dwelling.

According to Heidegger (1971), as human beings, we cannot fail to dwell because the essential existential core of human being-in-the-world is to dwell. And the term dwell, means to build. Building environment is crucial because it supports and reflects a person’s and group’s way of being-in-the-world. This suggests that buildings are a symbol of human’s innate quality to existing as well as a symbol of individuals and society’s culture [7]. In other words, buildings or architecture can be described as a footprint of cultural value acting as an artefactual language. The most prominent reference for this concept that buildings embed cultural values is *House Form and Culture* (1969) by Amos Rapoport. The forms of houses are determined not only through climatic reasons but also due to the availability of the materials and the construction technologies, the character of the site, need for protection, economics, religion, and also the socio-cultural reasons. Rapoport stresses the socio-cultural aspect of dwelling form over physical and by ‘socio-cultural’, Rapoport adapts Max Sorre’s term, *genre de vie*, which includes all the cultural, spiritual, material, and social aspects. He mentions that “houses and settlements are the physical expressions of the *genre de vie*, and this constitutes their symbolic nature [8].

2.2.3 *Archetypes*

With the architecture as artefactual language, we need to find out the common units or the components of architecture because they will serve as the starting point of behavior spaces. This is why archetypes are investigated. In this section, the idea of an archetype is explored from various perspectives.

The concept of an archetype is one of the most important, if not the central concept of analytical psychology. In fact, the origin of archetypal hypothesis dates back as far as Plato in his work, *Theory of Forms*. He suggests that pure mental forms are imprinted in the soul before people are born into the world. Archetype indicates the collective sense of characteristics that are fundamental to things [9]. In modern times, Carl Jung is renowned for advancing the concept of psychological archetypes. According to his definition, archetypes are innate and are the collective unconsciousness. From a most religious different perspective, Eliade (2003) suggests that an object or an act becomes real only if it repeats through imitation. Anything that lack repetition or participation lacks reality. In other words, human feel real when we repeat the imitation of archetypes [10].

In one of the recent work by Roesler (2012) from the field of analogical psychology, it summarizes some of the attempts to reformulate the concept of the archetype [11]. According to the author, so far, the most sophisticated reformulation of the archetypes concept is Jean Knox's (2001) theory of image schemas. Image schemas also known as archetypes are a representation of features formulated when humans interact and organize the environment [12]. In Roesler (2012)'s terms, the transmission of archetypes can only be theorized by means of culture and socialization, not genetic.

A coherent use of the concept is based on an understanding of archetypes as universal patterns producing meaning and guiding development. While Jung referred to archetypes as an inheritance via the transmission of genes like a blueprint for development, the archetypes referred to by researches are generally complex symbolical patterns as we find them in myths, fairy tales, dreams, etc.

Combining the works of [10–12], we can narrow down that archetype is:

- imitated by people in repetition for their sense of reality/existence [10]
- transmitted only by means of cultural and socialization [11]
- an image schema which is a representation of features in the environment crucial to survival [12].

Conclusively, archetypes are features in the environment that are repetitively imitated throughout human history transmitted through cultural and social acts. From this, more complex representations are built. If archetypes are defined as above, we can say that we need to find features in the environment that are repetitively imitated throughout human existence transmitted through cultural and social acts in order to discover the archetypes of architecture.

2.2.4 *Archetypes in Architecture*

According to Thiis-Evensen, the term, archetype was first used systematically within the architectural theory by Paul Zucker in his book, *Town and Square* from 1960 [13]. He described five square archetypes, using specific examples to show how history chooses that form what is appropriate and how these typologies, owing to dissimilar functional characteristics, vary from antiquity into the present day. The theory of archetypes was further developed in the 1960s, with the Aldo Rossi's book *The Architecture of the City* from 1982 [14]. During 1970s, the theory of archetypes has increasingly been utilized as a basis for architectural practice. One of the goals for defining archetypes in architecture was to show that there is a common language of form which we can immediately understand, regardless of individual or culture [15].

As one of the example, the theory of archetype has also been investigated in the architectural fields that investigate the repeating features in architecture [16]. As a student of Norberg-Schulz, one of the existentialists, Thiis-Evensen investigates a repeating feature in our environment common throughout different cultures. He concluded that any building can be interpreted experientially in terms of floor, wall, and roof and that they separate that architectural life world into interior and exterior. Thiis-Evensen argues that these three architectural elements (wall, floor, roof) are common to all historical and cultural traditions. The essential existential ground of floor, wall, and roof, he argues, is the relationship between inside and outside. Just by being what they are, the floor, wall, and roof automatically create an inside in the midst of an outside, though in different ways: the floor, through above and beneath; the wall, through within and around; and the roof, through over and below [17].

- Floor: directs people, demits a space, support by providing a firm footing
- Wall: draws exterior inside, or interior outside, has a window that express the interior to the world at large
- Roof: separates spaces of what is over and what is below

Here, these three elements (floor, wall, and roof) are the archetypes that are transmitted by means of cultural and socialization, imitated by people in repetition for their sense of reality/existence, and it is an image schema crucial to survival.

2.3 Problem Definition

2.3.1 *Virtual Space as a Behavior Space*

As we become immersed in virtual communities, it can be said that we live in a virtual environment. Currently, researches that investigate the concept of dwelling in a physical environment are on-going from the perspectives of architectural elements as well as social and cultural elements. On the other hand, there are few researches that investigate the concept of dwelling in a virtual environment

(in social networking services and mobile instant messaging applications) [17, 18]. These researches approach the concept of dwelling from the social perspective (such as social boundaries) rather than architectural perspectives. However, living in the virtual community is becoming a part of our lives [19] and our society is shifting from living in “little boxes” to living in networked societies [20].

We raise a question whether living in networked societies is innately natural to humans. For a long time, people have dwelled in spaces where the forms and functions are clear making it easier for people to navigate. However, in virtual behavior or dwelling space, there is a fuzzy boundary between form and function. That is why people get lost in their virtual behavior space and if this keeps up, the users of the net will continue to face fragmentation of themselves in numerous undefined spaces. While there have been attempts to unify all information about the users by data synchronization, we make an argument that by making the analogies between physical architecture and virtual architecture, we might have a chance of understanding how people innately and intuitively want to occupy space categorizing their lives and information.

2.3.2 Analogies Between Physical Architecture and Virtual Architecture

Using the three components that strengthen the quality of dwelling in a physical space as a guide, the elements related to the floor, wall, and roof mentioned by Alexander (1977) are subcategorized as shown in Table 2.1. For instance, a floor

Table 2.1 Identifying archetypes in physical space in virtual space

Archetypes	Sub-categories	Physical space	Virtual space
Floor	Function	Directs people, separates spaces, provides firm footing	Directs people, separates, provides firm footing through hyperlinks
	Layout	From structure follows social spaces	Is this true that a virtual environment also have social spaces through different system structures? If so, what kind of structure creates social spaces?
	Surface	Clear distinction between public and private using surface types	What would happen if a concept of surface is implemented in a virtual space? (Making users aware of where they are)
	Foundation	Ground floor slabs support walls and roofs	Does the infrastructure (fiber optic cables, IP address, routers, and etc.) that allows internet also have a structure like that of a ground floor slabs?

(continued)

Table 2.1 (continued)

Archetypes	Sub-categories	Physical space	Virtual space
Wall	Function	Draws exterior inside, or interior outside	Draws others to you, or you to others
	Half-open wall	Too closed prevent social flows, too opened does not differentiate the events. Adjust the walls, openings, and windows until you reach the right balance between open, flowing space and closed cell-like space using columns, half-open walls, indoor windows, sliding doors, low sills, porches, sitting walls—a barrier which functions as a barrier which separates, and as a seam which joins at the same time	Do virtual social spaces allow the adjustment of the openness and closeness? Currently there are ways in the privacy settings however, it might be better if they are visualized. For the posts that are only for me, enclose them in a concrete box, for the posts that are only for my friends, enclose them in a sliding doors, for the posts that are for everyone but not wanting to share should be enclosed surrounded by columns, and the posts that you really want to share should be in the porches
	Thickness	Smooth hard flat walls allow people to express their own identity of a dwelling on thick walls. People keep their belongings, place furniture, post memories	Wall in Facebook is the most direct analogy. But does Facebook wall have thickness? How can a thickness of a virtual wall be quantified?
	Structural membrane	Supports the structural solidity of the building creating rigid connection between columns, beams, and the floors. But there are curtain walls where it defines space but do not keep structure letting the frame do all the work	What creates a rigid connection between the users and the service providers? Is there such thing or is virtual space composed of curtain wall membranes only? Flexible and adjustable?
	Outside walls	The main function of outside wall is to keep weather out. And it does so by joining the materials in a way that they cooperate to make impervious joints	Do Facebook administrators have such thing where they make impervious joints to keep hackers out?
	Inside walls	Inside surfaces should be warm to touch, soft enough to take small nails and tacks	How can we make Facebook users feel more pleasant? What does it mean by making the inside walls soft? The walls facing the user should be soft and interactive?
Roof	Function	Separates spaces of what is over and what is below	Separates spaces of what is accessible and what is not
	Heights	The heights of the roofs determine the social meanings	Does Facebook have different roof heights? Is the level of accessibility different for different spaces?
	Layout	Place the largest roofs—those which are highest and have the largest span—over the largest and most important and most communal spaces; build the lesser roofs off these largest and highest roofs; and build the smallest roofs of all off these lesser roofs, in the form of half-vaults and sheds over alcoves and thick walls	What is the arrangement (size, network) of the administrators?

has a layout (large rooms have higher social importance), surface types (soft/warm = private, hard/cold = public) [21], and base structures that support the walls and the roofs. Then for each sub-category, physical explanations and possible hypothesis from the perspective of a virtual environment are brainstormed.

2.4 Future Works

This exploratory essay is to serve as a mind map to solve the problem of fragmentation of ourselves in virtual space. Considering that we dwell in virtual spaces as much as we dwell in physical spaces, and that we innately have been dividing and categorizing our physical spaces in human history, we want to investigate how humans use what kind of space (in terms of form) for what (function) then apply these coupling between form and function onto the virtual space for a more manageable and instinctive design of virtual space. But in order to that, we realize that we need a common unit of structures in physical space to investigate the differences of form and functions in cultures, that is, if the differences exist. When a code that couples form and function in our physical space is created using the archetypes of architecture, we can then make analogies with the components of virtual space to provide guidance to how to make the boundaries between virtual behavior spaces clearer. Being at a very early ideation stage of formulating a path to solve a problem, there are much more works to be done.

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