

Research Article

# Architecture as spatial storytelling: Mediating human knowledge of the world, humans and architecture



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**Abstract** Since the 1960s, architecture has been interpreted by Structuralism as a system of signs, which results in the problem that architecture is isolated from humans and the world. In contrast with this idea, this paper demonstrates that architecture is designed as spatial storytelling to mediate human knowledge of the world, humans and architecture. The research method consists of an original survey of meaning and interpretation drawn from the fields of philosophy, linguistics, hermeneutics, humanistic geography, narrative theory, psychology, architectural theory and museology, in combination with the researcher's personal perception and experience. By employing three elements – materials, configuration and time – to conduct parallel analysis of components of the world, humans and architecture, this paper contributes to an original theoretical model for analysing the idea of architecture as spatial storytelling. Moreover, this study concludes that, since it is constructed of meaningful materials, meaningful configuration and meaningful time, architecture is a form of spatial storytelling, which mediates human knowledge of the world, humans and architecture, thus shaping human intellectual record both tangibly and intuitively. Therefore, the fact that architecture is connected with humans and the world has been demonstrated by spatial storytelling, while also being carried forward from generation to generation.

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## 1. Introduction: problem of architectural isolation, with reference to Barthes and Husserl

### 1.1. Rethinking architecture as system of signs

Regarded as the father of modern linguistics, Ferdinand de Saussure laid the foundations for many significant developments in linguistics in the twentieth century. In 1916, the notion of 'sign' was first introduced in his posthumous work, *Course in General Linguistics*. According to Saussure, language is a system of signs that expresses ideas and operates on two levels: *langue and parole* (Bally et al., 1960, p. 16). *Parole* refers to an individual act of speech, whereas *langue* is the pre-existing system of rules and conventions that makes this act possible. Saussure's work on linguistics contributes significantly to the emergence of Structuralism. By focusing on the way that human experience and behaviour were determined by various structures, without considering individual will, choice or social context, the movement of Structuralism rose to prominence in France in the 1960s.

Influenced by Saussure, Roland Barthes developed the knowledge of 'language' further, by researching how Structuralism could be applied to literature. In Barthes's *Elements of Semiology*, each linguistic sign is classified by the 'signifier' and the 'signified', instead of '*langue*' and '*parole*', in order to explain the relationship between language and human sciences. Apart from the composition of individual signs, the system of signs can be developed on two planes – the syntagmatic plane and the systematic plane – whereby the syntagmatic plane is a combination of signs, and the systematic plane is the associated plane. Saussure's theories of the applications of these two planes were explained by Barthes through examples of social systems, such as clothing, food, furniture and architectural systems. Regarded as a sign by Barthes, the syntagmatic plane of architecture is the whole presentation of each level of a building, such as the ground floor, first floor, and so on; the systematic plane then refers to the variations of each single element, such as pillars, railings, floors. With regard to the meaning of the sign, there are also two planes in relation to the 'signified' and the 'signifier', which are the plane of expression (E) and the plane of content (C). By alternating these two planes, a sign acquires meanings of denotation and connotation, whereby connotation refers to 'a system whose plane of expression is itself constituted by a signifying system' (Barthes, 1977, p. 89), referring commonly to 'which language forms the first system (this is, for instance, the case with literature)' (p. 90). In contrast, denotation refers to the system of metalanguage, 'whose plane of content is itself constituted by a signifying system' (Barthes, 1977, p. 90), meaning generally the human application of language rather than the later innovation of its meanings.

For Barthes, architecture is a system of signs so that a building is more than a collection and composition of structural constructive elements – for instance, walls, floors, windows, pillars and ceilings – which only serve functional purposes (Barthes, 1977). Such interpretation

does reveal the functional denotation of architecture. However it also isolates architecture from human beings and the world. As an artefact created by humans, architecture is closely connected with *humans*, and simultaneously, as a shelter occupied by humans at some time, in some place, architecture is closely connected with the *world*. In addition to structural, functional meanings, for human beings architecture is also, 'a psychological need, a social prerequisite, and even a spiritual attribute' (Tuan, 2001, p. 58), which could signify endless, possible meanings. Therefore, rethinking Barthes's idea on architecture as a system of signs prompts the question: If architecture is more than a sign, what does it mean to us?

### 1.2. Understanding Husserl's 'life-world'

In 1936, Edmund Husserl, regarded as the father of phenomenology, introduced the notion of 'life-world' in his work *The Crisis of European Sciences and Transcendental Phenomenology*, which laid the primitive foundations of phenomenology. According to Husserl, 'life-world' is the background for all epistemological enquires of human beings. In 'life-world', humans are conscious that everything in the world is alive and meaningful, pre-given in its original appearance. In 'life-world', the world that humans experience every day is not static and unchanging, but a *lived* and dynamic world for humans to perceive, engage with and experience at any time; in which humans transform from a 'nonparticipating spectator, surveyor of the world' (Husserl, 1970, p. xl) to a lively participant, constantly and actively discovering and experiencing the world.

In *Being and Time*, Martin Heidegger developed the 'life-world' as 'being in the world', in which the 'life-world' was presented with the insight that human beings exist in the world with an inseparable connection to it (Heidegger, 1962). Influenced by both Husserl and Heidegger, Maurice Merleau-Ponty looked further into the notion of 'life-world' in *Phenomenology of Perception*. For Merleau-Ponty, the human body is the central vehicle through which humans experience and understand the world (Hale, 2017, p. 1), and are conscious of an inseparable connection from the world. From the 'recesses of a body' (Merleau-Ponty, 2012, p. 11), perception not only stands for the 'sensorimotor capacities' of the human sense of the world (p. x), but also signifies modes of human existence, which are ways of humans *being in the world* (*être au monde*) (p. x).

Hans-Georg Gadamer also developed the notion of 'life-world' in *Philosophical Hermeneutics* in 1976. According to Gadamer, 'life-world' is, in principle, 'a finite, subjective-relative world with indeterminately open horizons' (Gadamer, 1992, p. 193). Influenced by both Heidegger and Gadamer, Paul Ricoeur utilized the concept of 'life-world' in *Hermeneutics and the Human Sciences*. According to Ricoeur, in 'life-world', the world 'is manifested no longer as the totality of manipulable objects' (Ricoeur, 1981, p. 112). Instead, it becomes a world that humans are willing to engage with, as well as providing various possibilities for human lives to become real, 'as *Lebenswelt* [life-world]' (Ricoeur, 1981, p. 112), and thus 'symbolic dimensions of our being-in-the-world' (p. 202). Based on the above, the

researcher would like to demonstrate further that the notion of 'life-world', on the one hand, offers humans knowledge or an understanding of the world, which is the world where humans exist, live and belong – that is a *lived*, meaningful world – and where everything in its pre-given manner waits for human engagement, discovery and understanding. On the other hand, the notion of 'life-world' offers humans a means to know the world, thus humans should employ their own bodies as central vehicles to perceive, experience and understand the world. Only in this way can humans, and human existence in the world, be understood, revealed and interpreted.

By recording the development of human history, social transformation and the joys and sorrows of human life, architecture progresses through human accomplishment – making and using – rather than remaining at a standstill as if it belongs to a lifeless world. Architecture is designed by human beings as spatial storytelling to mediate human knowledge of the world, humans and architecture. Using an original survey of recent theories of meaning and interpretation, the purpose of this paper is to apply the insights of relevant philosophical ideas to the question of interpretation and mediation in an architectural dimension. By analysing materials, configuration and time – each of which is regarded as a common element contained by the world, humans and architecture (see Sections 2, 3 and 4) – this study contributes to an original theoretical model for elaborating the idea of architecture as spatial storytelling. In addition, it promotes new knowledge and a new understanding of architecture. Section 5 concludes this study.

## 2. Meaningful materials

The system of architecture does not consist of a system of signs. According to the researcher's daily observation, architecture is constructed of meaningful materials, consisting of worldly materials and human materials. Even though it is arguable whether spoken or written language is presented through certain materials, such as air, fabric or textiles, 'the language system is virtual' (Ricoeur, 1981, p. 198), but does not possess material properties of its own. Therefore, Section 2 focuses on analysing meaningful materials, which contributes to mediating human knowledge of the world, humans and architecture.

The world in which humans exist and live is a material world:

We engage with the material world from the moment we are born, we learn intuitively what it is, we make it physically, we shape it emotionally, we create meanings, consume objects and meanings together, and even give those objects, and perhaps even those meanings, to others. (Knell, 2007, p. 16, p. 16)

With 'materiality and gravity, and the sensory and embodied understanding of these physical phenomena' (Pallasmaa, 2009, p. 69), material is 'all we are and all we have' (Pearce, 2009, p. xiv). 'Earth arose out of the primordial waters' (Tuan, 1974, p. 20), air provides the fundamental necessity for humans to live, and light acts as a magician directing human life. As long as one lives on the Earth, natural light – the most generous gift of the

sun – shapes human understanding of light and dark, day and night, which can also bring about humans' temperature sensation of the world. As an inheritance of human ancestors' first application of fire, the invention of the first electric lamp produced artificial light, which 'changes under the impact of time, reason, humidity, etc.' (Frampton, 1983, p. 27), and stores sunlight metaphorically so that any built environment is alive and suitable for living. Compared with the lightness and transparency of air and light, other worldly materials are experienced more easily for they have more specific elements of texture, smell and colour. Textural sensations such as rough and smooth (brick and glass), cold and warmth (concrete and wood), solid and soft (marble and canvas), weight and lightness (metal and bamboo) are judged differently. Odours such as the natural and artificial smells of raw wood and plywood can be explored. Colours – 'which play an important role in human emotions, may constitute man's earliest symbols' (Tuan, 1974, p. 24) – vary by hue, and sensations of different materials can be observed. Therefore, it is materials that shape the fundamental being of the world.

As living beings, no one would deny that humans consist of materials – skeletons, skin, hair, teeth and vital organs. No one would deny either that 'humans, like other mammals, are equipped with skins which can feel, eyes which can see, ears which can hear, and mouths and noses which can taste and smell' (Knell, 2007, p. xv). As the largest organ of the human body, and the first protective and sensory 'wall' of the immune system, skin is 'the site of our most intimate communication with the world' (Mallgrave, 2011, p. 202). Eyes facilitate the sense of sight, and help 'man to see things sharply as three-dimensional bodies' (Tuan, 1974, p. 7). Hands, which can combine strength with unmatched precision (Campbell, 1966, pp. 161f), function mainly as tactile organs, facilitating the sense of touch. Legs enable movement, facilitating a sense of kinaesthesia. The ear facilitates the ability to hear; even though the eyes gain far more precise information about the environment than the ears, but humans are more influenced by what they hear than by what they see (Tuan, 1974, p. 8). The nose enables the sense of smell, which is 'an amazingly proficient organ for sniffing out information' (Tuan, 1974, p. 9).

With reference to Merleau-Ponty, far from being a source of inaccuracy and error, the sensory information provided by the sensory organs of the human body is actually a primary source of human knowledge: not a barrier but a bridge to the world (Hale, 2017, p.13). In addition to material obtained by the human body, humans also have thoughts, feeling, emotion, creativity, imagination and spirit. Material originates from the mind, which allows 'humans to exercise, to the vanishing point, the desire for understanding and the appetite for wonderment at their own nature that Aristotle recognized as so distinctively human' (Damasion, 2000, p. 4). By acknowledging worldly and human factors of material, humans employ different materials in the design of architecture.

Human beings not only discern geometric patterns in nature and create abstract spaces in the mind, they also try to embody their feelings, images, and thoughts in

tangible material. The result is sculptural and architectural space, and on a large scale, the planned city. (Tuan, 2001, p. 17, p. 17)

Before the construction of any architecture on the Earth, 'as a necessary first step', the builder normally needs to choose specific geographical 'healthful sites' (Vitruvius, 1999, p. 46). He then needs to think about selecting wood, stone or steel, certain materials with different colours and texture, or other perceptible elements to make architecture a reality. Architecture may, for example, be made of wood and be of a certain colour (Hooper-Greenhill, 2000, p. 103). In order to create spaces such as the living room of your grandparents' apartment, the lobby of a grand hotel or the atrium of a museum, natural light is treated as the most important characteristic of architecture (McCarter, 2005, p. 136), not only for survival but also for a lengthy and comfortable stay, for 'light tells you that the porch belongs to the sun and the place inside the porch belongs to man' (p. 137). Regardless of natural or artificial light, for people outside, a space with artificial illumination may mean home and hope; for people inside, space with sufficient natural light may mean vitality and abundance. The extreme example of the interior of the Egyptian pyramids, with their thin air and dim, or even no natural or artificial light, might signify the finality of death. When touched and observed, light 'has a powerful force which can bring any architectural setting above and beyond its physical comfort' (Mallgrave, 2011, p. 204). In addition to the significant layer formed by air and light, wood, stone or steel, several other materials required for constructing architecture are carefully selected to allow human perception to penetrate their surfaces and convince them of the veracity of matter (Pallasmaa, 2012, p. 34). Moreover, 'the elements are made use of in working up this material' (Hegel, 1926, p. 56): 'fire to melt iron, wind to blow the fire, water to set wheels in motion in order to cut the wood, etc.' (Hegel, 1926, pp. 56f). Finally:

... they [humans] erected forked uprights, and weaving twigs in between they covered the whole with mud. Others, letting clods of mud go dry, began to construct walls of them, joining them together with wood, and to avoid rains and heat they covered them over with reeds and leafy branches. Later, when these coverings proved unable to endure through the storms of winter, they [human] made eaves with molded clay, and set in rain-spouts on inclined roofs. (Vitruvius, 1999, p. 34, p. 34)

The result is that the wind, which has helped to build the house, is shut out by the house; so also the violence of rains and floods, and the destructive powers of fire, so far as the house is made fireproof. The stones and beams obey the laws of gravity, press downwards, and so high walls are carried up. Thus the elements are made use of according to their nature, and yet to co-operate for a product by which their operation is limited. Thus the passions of men are gratified, they develop themselves and their aims in accordance with their natural tendencies, and build up the edifice of human society, so fortifying a position for right and order against themselves. (Hegel, 1926, pp. 56f)

Along with the actual construction of architecture, in order to make it more user-friendly and actualize a better sensory experience of materials, builders consider qualities such as atmosphere, to imagine and judge if the employed materials can actually generate the required sensations of the building. It is certainly not possible to enumerate and explain each material and the meanings that humans want to apply to the design and construction of architecture; the architectural materials inevitably and irrefutably demonstrate human knowledge of the world, humans and architecture.

### 3. Meaningful configuration

Even though it is arguable that different cultures have different representations of their spoken or written language, nevertheless, a system of signs cannot be made of rectangular forms of certain length, width and height, nor from cylindrical volumes with certain sectional areas, which neither occupy physical space nor can be measured. Needless to say, architecture has a three-dimensional configuration. Therefore, Section 3 focuses on analysing meaningful configuration, which contributes to mediating human knowledge of the world, humans and architecture.

The world in which humans exist and live is a configurative world. In archaic formulation, Heaven is spherical and Earth is cylindrical (McEwen, 1993, p. 25). According to Semper, the simplest natural form is the absolute, all-embracing uniformity of the circle (Hvattum, 2004, p. 92). By observing natural phenomena at a more detailed level, we know that snow crystals and minerals display crystalline structures, which can be described as radial symmetry formed by a circle and sphere (Hvattum, 2004, p. 92). A crystalline structure is also found in organic forms, such as the stem of a plant (Hvattum, 2004, p. 92), which demonstrates eurhythmy (Rykwert, 1981, p. 29). According to Semper:

From the nondirectional centre of gravity in the crystal to the axially of most plants, and further to the three-dimensional organisation of the animal, the principles of configuration evolve gradually from simple to complex. (Hvattum, 2004, p. 98, p. 98)

Mountains with successive irregular curves stretching continuously for miles are regarded by 'people in widely different parts of the world' as 'the place where sky and earth meet' (Tuan, 1974, p. 70). A river full of water, shaped by its rapid flow into serpentine configurations full of twists and turns, challenges anyone who wants to swim and dive in; maybe only aquatic creatures have the ability to resist its fierce power. Resembling giant, outspread wings, magnificent bridge structures symbolize and demonstrate the ambition of urban territory. Birds make intricate harmonious sphere-like nests, bees build their nests in geometric hexahedrons, beavers create their lodges as a cylinder, and 'termites build skyscrapers' (Tuan, 2012, p. 97). Perhaps these configurations provide comfort, enclosing and protecting their inhabitants effectively from severe weather conditions. As hunters in caves, shepherds in tents, farmers in proper huts (Soane, 1929, p. 20), each

group selects a specific configuration to locate and shelter their bodies against 'inclement weather, wild beasts and human enemies' (Rykwert, 1981, p. 21). Reflected further not only through senses, but also through whole-body or bodily perception and experience, configuration pushes human understanding of the world in concert with a wide variety of bodily capacities (Rush, 2009, p. 20), and generates immediate experience through figurative expression.

As living beings, no one would deny that humans consist of configurations. Even though it is difficult to describe the human body via specific or precise shapes, structures or forms, or to try to locate these shapes and structures alongside similar configurations in the world, no one would deny that: eyes are round or almond-shaped; a nose is triangular, like a hawk's beak or a lion's nose; hair is straight like noodles, or curved like waves; facial features are round like an apple, or oval like an egg; and the figure of the body is as plump as a fresh pear, or as slim as a tall telegraph pole. All contribute to the definition of an individual's uniqueness. According to Semper, the head, 'as manifestation of direction, represents the high symbol of absolute free will, equally independent of self-preservation and material constraints' (Hvattum, 2004, p. 96). By owning exposed body parts such as the head, arms, legs, hair or skin, humans are able to establish immediate connections with the outside world and other human beings. In addition, humans also have built-in organs such as the heart, brain and womb, which are important to fertilize, cultivate and nourish perception, imagination, emotion, thinking and even new life. The organs of the body not only facilitate a better understanding of the outside world, but also help 'manifest a world' as a private, human internal world (Merleau-Ponty, 2012, p. x), used 'to describe, to express, or to represent' (Ricoeur, 1981, p. 198). By grounding 'the basic forms of all human experience and understanding, namely perspectival orientation and figure/ground contrast, focus and horizon' (Merleau-Ponty, 2012, p. x), configuration offers humans 'not actually means of representing a truth already known, but rather of discovering the previously unknown' (Gadamer, 1992, p. xxx). Their diversity is not one of sounds and signs, but a diversity of world perspectives (Gadamer, 1992, p. xxx).

With reference to Rykwert, 'primitive builders had been able to fulfill the two essential conditions of great architecture: the first, that having measured by units man had derived from his own body (the inch, the foot, and so on)' (Rykwert, 1981, p. 16). Therefore, buildings were made, 'in man's measure, to human scale, in harmony with man' (p. 16). And according to Le Corbusier:

having been guided by instinct to the use of right angles, to axes, to the square and circle ... [primitive man] could not create otherwise than by demonstrating to himself that he had created. For axes, circles, right angles are truths of geometry, they are the truths our eyes measure ... Geometry is the language of the mind. (Le Corbusier, 1926, p. 55, p. 55)

In addition to being measured by human standards, before construction a builder should ask questions such as: What kind of shape should I select? Should it be circular or rectangular, or should a regular or irregular geometric

configuration be applied? For the builder, 'shapeliness is an attractive appearance and a coherent aspect in the composition' of architecture (Vitruvius, 1999, p. 25). It is achieved when different configurations of architecture are proportionate with regard to height to width and length to breadth, and every configuration corresponds in its dimensions to the total measure of the whole (p. 25). In addition, humans employ different configurations in order to generate different feelings and symbolizations. In Classical times, 'tree-like columns and columnar shafts and the tendency to concentrate significant variation of ornament on areas such as capitals which occupied a position similar to that of the most significant features at the tops of tree trunks' revealed that 'trees and woods have always had a special importance as at one the best source of food and the favourite haunt of enemies' (Onians, 1990, p. 4). Likewise, the fact that 'a column was also man-like would have encouraged a similar concentration of significant variation in the head-like capital, where the eye would tend to be most alert to changes of expression' (Onians, 1990, p. 4). Regardless of 'the variations of architectural form' used by people in earlier periods (Onians, 1990, p. 4), or 'pure geometry' introduced according to 'the idea of a mathematical knowledge of nature' (Husserl, 1970, p. 24), configuration is also 'capable of evoking certain types of emotion' (Tuan, 1974, p. 29). For example, vertical configurations evoke a sense of striving, a defiance of gravity, whereas horizontal ones call to mind acceptance and rest (Tuan, 1974, p. 28). Windows as open configurations in a wall can signify 'freedom, the promise of adventure, light, the public realm, formal and unchanging beauty' (Tuan, 1974, pp. 27f); cinematic or concert rooms as enclosed configurations thus signify 'the cosy security of the womb, privacy, darkness, biologic life' (p. 28). Moreover, configuration in architectural design calls for humans to discern the potential users of a space in advance. For instance, the design of a kindergarten, where children are generally small, differs greatly from the design of an office building, in which adults are larger. It is certainly not possible to enumerate and explain each possible configuration of all architecture. Configurations actualize the level of architecture that 'influence human impression of size – of the way space expands and contracts to a degree that natural landforms rarely give' (Tuan, 1974, p. 29).

#### 4. Meaningful time

In as much as time is important to architecture with regard to language, language is 'outside of time' and does not contain remarkable temporal properties (Ricoeur, 1981, p. 198). Certain languages do contain temporal properties – for instance, Chinese characters contain the evolution of the writing styles of different dynasties – and it is not difficult for professional Chinese linguists, or people interested in Chinese calligraphy, to identify the specific dynasty from the characters' writing style. One could argue that linguistic signs also contain traces of the 'history' of their own making and gradual evolution. Nevertheless, perhaps they are not, and never can be, as obvious as architecture. Therefore, Section 4 focuses on the analysis of

meaningful time, which contributes to mediating human knowledge of the world, humans and architecture.

The world in which humans exist and live is a temporal world. Since the moment our human ancestors obtained the concept of time by observing the shifts of the sun and moon, 'without being movement itself, time is something that has to do with movement (*ti tès kinéséôs*)' (Ricoeur, 1990b, p. 13). 'This is why it is simply not true that a day would remain what we call a "day" if it were not measured by the movement of the sun' (p.13). Furthermore, the ebb and flow of the tides validate the movement – working and rest rhythms – of the sun and the moon. Alternations of the four seasons are related to the movement of the Earth, which enables the remarkable and magical performance of nature through time: in spring, the ice melts from the mountain peaks and the land recovers; in summer, the luxuriant foliage of forest trees grows rapidly, and days gradually become longer; in autumn, farmers celebrate the year's harvest and everything in nature turns golden; in winter, everywhere becomes white, silent and mysterious as if the land had been ruined by the White Witch of Narnia. Moreover, trees have rings to denote their age, just as colourful fluorescence can reveal the current season and the next to come. In the wild world, the sedimentation of the Earth's strata reveals the age of our planet, just as rocks can tell the age of an erupting volcano. In order to understand these natural phenomena of temporal change and transformation, humans not only employ methods such as observation, but also invent mechanical timepieces – regular, objective, silent and constantly moving forward – to make sense of natural time. 'These modes of organizing time are abstract in the sense that they provide a grid of regular intervals' (Abbott, 2008, p. 4), which allows our conscious awareness to gradually process experience of time in more abstract conceptual terms (Hale, 2017, p. 17).

As living beings, no one would deny that humans consist of time. They have hearts which beat several times a minute, a nose and mouth for breathing at regular intervals, the whole body's metabolism is generated regularly every day, month and year, and the nails of hands and feet, and hair grow longer. An infant grows into a woman and then into an elegant, older woman, so her hair gradually turns from a dark colour, such as black or brown, to grey; she will also have wrinkles on her face as her skin droops; and her body will not be as supple as an infant's or a teenager's. Moreover, even human height reduces as we age. In addition to the traces left by natural time on the human body, time can be marked by the stages of human movement in the world (Tuan, 2001, p. 198): an infant crawls from this side of the lawn to the other; an Olympic athlete runs in the final of the 400 m; an elderly couple walk hand in hand by a beautiful lake. As humans grow and their daily routines expand, they need to move from one city to another, from this side of the world to the other. Time experienced by human movement thus offers humans 'a sense of motion, direction and balance' (Hale, 2017, p. 14), which helps them to monitor ongoing movement, giving them the means to adjust their behaviour in order to achieve intended goals (Hale, 2017, p. 9). More importantly, time via human movement contributes to shaping 'human time' (Tuan, 2001, p. 131). Like the human body, 'human time' is asymmetrical: one's back is to the past, one's face

to the future' (Tuan, 2001, p. 132). It is 'the course of human life' (Tuan, 2001, p. 131), as well as 'the growth, history, and culture of every individual, collective and nation' that 'embodies human beings in the real and quotidian world' (Lu, 2017, p. 454).

Like small artefacts such as mechanical timepieces with their specific function to locate, understand and record the passage of natural time, architecture is a 'time-machine' (Lumly, 1988, p. 18), which is 'capable of progress: successive envisagements (plans) lead to successive constructions' (Tuan, 2012, p. 97). Therefore, in the design of architecture, time is something humans experience and construct (Tuan, 2012, p.100). With regard to the making of architecture, it undoubtedly takes a builder a certain length of time – several days, weeks, months, years or even decades – to construct a building. Take Antonio Gaudi's Sagrada Familia, for example, which is still under construction despite almost 136 years of recorded building, alongside 136 years of its own history. Besides their construction, not only can buildings 'have a history of their own encounters with the world' (Hale, 2017, p. 76), but also the transformation of the materials – rotted texture, faded colours and musty odour – can reveal the fact that the material itself has been affected by 'the wear and tear' of natural time (Foucault, 1997, p. 354). Even though weathering is 'a power of subtraction', which unquestionably results in newly finished corners, surfaces, and colours to be 'taken away by rain, wind and sun' (Mostafavi and Leatherbarrow, 1993, p. 6), marks left by the process of weathering, however, 'may be intended or even desired' (p. 6). As a result, 'a romantic appreciation of the appearance of buildings that have aged, with their mellowed brickwork, moss-covered stone, and seasoned timber' will be generated, revealed and even created (Mostafavi and Leatherbarrow, 1993, p. 6).

In addition to time obtained by the building itself and its materials, it is essential for the builder to arrange different kinds of 'human time', such as linear or circular (Tuan, 2001, p. 131). Linear 'human time' requires the design of directional routes and circulation, thus an infant crawls from the bedroom to the living room in order to carry out more activities, or a child climbs from the first floor to the second floor of a bookshop to find more fairy tales. When time is linear, it 'is experienced – is felt – when we wait, expect, or hope' (Tuan, 2012, p. 100). Circular 'human time' designs cyclical routes and circulation; for instance, a mother caring for a newborn baby walks from bedroom to kitchen to cook, then from the bathroom to the balcony to hang laundry, and back to the living room where the crib is located to sing a lullaby to her smiling infant. When time is circular, it is 'experienced as rhythms of the body: breathing in and out' (p. 101). Compared with natural time, 'human time', anchored by human movement, is irregular and subjective, taking place over and over again.

Designing time in architecture therefore not only defines and refines sensibility, but also sharpens and enlarges consciousness of the builders' understanding of human behaviour, action, movement, activity and lives, embedding when, where and how within different buildings (Tuan, 1974, p. 106), which 'itself is to appear as lived experience' (Ricoeur, 1990b, p. 26). The understanding of time thus reveals the fact that the essence of life is not a feeling of

being or of existence but a feeling of participation in a flowing onward, expressed in terms of time (Minkowski, 1936; Tymieniecka, 1962; Bachelard, 1994).

## 5. Conclusion

Constructed of meaningful materials, meaningful configuration and meaningful time, architecture is 'never autonomous' and 'cannot be reduced to a language' (Tschumi, 1996, p. 3). Meaningful materials, meaningful configuration and meaningful time mediate human knowledge of the world, humans and architecture, independently as well as together.

Made up of materials, configuration and time, the world is *lived*. It is a material world, for which the notion of nature, as an isolated island of matter waiting for humans to peel off its shell through the application of man-made knowledge, will no longer serve (Dudley, 2009, p. xvi). The world is not a collection of raw materials as opposed to constructed material goods, but 'rather a complex continuity of material relationships running from our bodies across the world, which are variously constructed into meanings of different kinds, of which "nature" is one' (Dudley, 2009, p. xvi), and of which 'culture' is another. Culture, as a manifestation of man-made knowledge, is neither a universe in parallel with nature nor does it sojourn ambiguously in our minds. 'Culture is created continually as we material beings engage with our material surroundings to produce the individual and social habits that add up to ongoing life' (Dudley, 2009, p. xvi).

The world is a configurative world of 'actually experiencing intuition' and 'belongs to the form of shape-time together with all the bodily [*körperlich*] shapes incorporated in it' (Husserl, 1974, p. 50). It is 'in this world that we ourselves live, in accord with our bodily [*leiblich*], personal way of being' (p. 50). As 'time surrounds us, envelops us, and dominates us, without the soul having the power to produce it' (Ricoeur, 1990b, p. 12), the world is a temporal world. With everything in motion, changing along with the transformation of natural time, the world is transient. As configuration is 'outside time, inaccessible to the wear and tear of the years' (Foucault, 1997, p. 355), the world is also symbolic, able to resist the power of time and symbolize permanence. Like the movement of sun and moon during the day and night, and the life cycle of every human being and every living thing on Earth, the world is cyclical. The world is objective and 'has an envelope of objective and determinate attributes' (Potts, 2000, p. 219), but is also subjective, with 'fissures and gaps into which subjectivities slip and lodge themselves' (p. 219), or 'rather they are those subjectivities themselves' (p. 219). The world is a world of living beings, that 'calls for the complete opening of the human spirit – what otherwise gets fragmented into intellect, will, heart, and sense – to the ever-present possibilities of the truth of being' (Heidegger, 1975, p. xviii). Above all, the world is real and meaningful as well as pre-given; constructed as well as inspired; imagined as well as created.

As a combination of materials, configurations and time, humans are living beings. They are tactile owing to 'the development of hands, strong and dexterous' (Tuan, 1974,

p. 7), which provides 'human beings with a vast amount of information concerning the world' (Tuan, 1974, p. 7). They are visual – 'most people probably regard sight as their most valued faculty' (Tuan, 1974, p. 6) – for 'a larger world is open to him, and far more information that is detailed and specific spatially reaches him through the eyes than through the sensory systems of hearing, smell, taste, and touch' (p. 6). Meanwhile, humans are kinaesthetic beings, for they have the ability to move, which shapes 'human capacities for perception and behavior' (Gallagher, 2005, p. 1), and contributes 'to the self-organizing development of neuronal structures responsible not only for motor action, but for the way we come to be conscious of ourselves, to communicate with others, and to live in the surrounding world' (p. 1). With the 'principle of reversibility between perceiver and perceived' (Hale, 2017, p. 66), humans are material beings for they can perceive the materials of the world. Moreover, they 'can only perceive the world' because they are, as bodily beings, also perceivable themselves (Hale, 2017, p. 112). As temporal beings, humans 'are the only species on earth with both language and a conscious awareness of the passage of time' (Abbott, 2008, p. 3), who 'have always been aware of the recurring cycles of the sun, moon, and seasons' (p. 5).

At the same time, they have always shaped and reshaped time as a succession of bodily events (Abbott, 2008, p. 5). Therefore, 'one's own body is in the world just as the heart is in the organism' (Merleau-Ponty, 2012, p. 209), which 'continuously breathes life into the visible spectacle, animates it and nourishes it from within, and forms a system with it' (p. 209). Also, humans are intellectual beings, for their minds open the way 'in human evolution to a new order of creations not possible without it: conscience, religion, social and political organizations, the arts, the sciences, and technology' (Damasion, 2000, p. 4). All in all, humans are spiritual beings, not only curious to know all about 'the tears, the laughter, the kicks, the punches, the flow of images we call thought, the feelings, the words, the stories, the beliefs, the music and the poetry, the happiness and ecstasy' (Damasion, 2000, p. 5), but they also possess an urge 'to stay alive and develop a concern for the self' (p. 5), for others and to 'improve the art of life' (p. 5).

Finally, architecture is a *living* thing, comprising materials, configuration and time. Appearing 'at the very origins of humanity' and as a final, creative and 'immediate product of human instinct' (Le Corbusier, 1926, p. 55), architecture is an artefact of embodied experience, which is 'made by people' (Hooper-Greenhill, 2000, p. 106), to 'challenge, intrigue, delight and amuse' (Fischer, 2017), and which 'resonates with them and their lives' (Greenberg, 2005, p. 226). The experience is *embodied* in that it is encountered by means of the human body – through materials, configuration and time – as the seat of perception (Rush, 2009, p. 4), and also because 'the architecture itself, as a complex body, impels experience in that way' (p. 4). The experience is embodied for it 'lies in the possibilities to be mined from the raw materials of the human tendency to understanding the world through stories it can tell' (Skolnick, 2005, p. 129), and the potential that these tales are translated into real-time, spatial experience through human design (pp. 129f).

As an actual human experience, with 'content which is the actual content of experience' (Husserl, 1970, p. 25), architecture is a shelter of enclosed habitation, where 'desire can recognise itself' and can live (Derrida, 1997, p. 317), which transforms the obvious enthusiasm of human beings 'into connected, engaging, integrated activities that lead to growth' (Hein, 1998, p. 3). Regardless of buildings' primitive purpose to shelter the human body, as demonstrated by 'man slowly adapting the various makeshift arrangements which the inclemency of the weather imposed upon him' (Rykwert, 1981, pp. 21f) – such as 'the onset of the Ice Age which forced men into shelters and caves' (Scully, 1979, p. 183) – 'it is the difference of conception, the attachment of meaning' that 'distinguishes man's first attempts in that direction from those of the instinctually driven beasts' (Rykwert, 1981, p. 22), to actualize human beings' physiological, psychological and spiritual needs. Acting to 'both constrain and enable certain kinds of life and experience' (Dovey, 1995, p. 291), architecture allows living events to take place 'within the clusters of room, buildings, streets and cities we inhabit' (p. 291), which are structured and shaped by walls, doors and windows, and 'framed by the decisions of designers' (p. 291). Architecture 'constructs the representational frameworks, the narratives of "places", in which we live our lives' (Dovey, 1995, p. 291).

Meanwhile, architecture is also a recorder of meaningful existence, not only as a collection of dwellings, but 'being on the earth' (Heidegger, 1997, p. 101), thus exemplifying 'that which is from the outset "habitual"' (p. 101), with regard to man's everyday experience. However, architecture is also created as 'a nest in the world, and we shall live there in complete confidence' (Bachelard, 1994, p. 103). Architecture guides humans:

by the necessity of rethinking our sensible life and our life of knowledge according to their encroachment, according to this continuous transgression that, from the body to the things and from the things to the body, comes about without our being able to identify its origin in a particular place' (Merleau-Ponty, 2012, p. xxv).

Humans who 'come to the world neither as data crunching information processors nor as ghostly apparitions floating over the surface of the world like a fog' are living beings (Merleau-Ponty, 2012, p. xii), and the world is 'the immediately intuited world' (Husserl, 1970, p. 49), especially 'the empirically intuited world of bodies' (Husserl, 1970, p. 49). Therefore, architecture is designed to collect, preserve and pass on the 'lived experience' of human beings (Ricoeur, 2004, p. 24), as well as their exploration of 'what man makes of his world, of his fellow beings, and of himself' (Bruner, 1992, p. xiii), and their constant participation with the outside world, inside world, other human beings and with architecture.

In summary, architecture is spatial storytelling which is designed to mediate human knowledge of the world, humans and architecture, and which is never isolated from the world and human beings.

Humans 'don't have any mental record of who we are until storytelling is present as a kind of armature, giving

shape to that record' (Abbott, 2008, p. 3). Spatial storytelling tangibly and intuitively shapes that record, which conversely, makes it real for human beings.

'[o]ur very definition as human beings,' as Peter Brooks has written, 'is very much bound up with the stories we tell about our own lives and the world in which we live. We cannot, in our dreams, our daydreams, our ambitious fantasies, avoid the imaginative imposition of form on life.' (Abbott, 2008, p.3, p.3)

Spatial storytelling demonstrates the fact that architecture is not isolated from the world and human beings. Instead, it is connected closely with the world and human beings, through its components of meaningful materials, meaningful configurations and meaningful time.

In whatever way we may be conscious of the world as universal horizon, as coherent universe of existing objects, we, each 'I-the-man' and all of us together, belong to the world as living with one another in the world; and the world is our world, valid for our consciousness as existing precisely through this 'living together'. (Husserl, 1970, p.108, p.108)

This is the significance of architecture – as a creative product of human beings that simultaneously mediates human knowledge of the world, humans and architecture.

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