GESTURE
an empirical process to assess meaning in architecture
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“Remember the impression one gets from good architecture, that it expresses a thought. It makes one want to respond with a gesture.”
L. Wittgenstein

Introduction
It is generally acknowledged that a piece of architecture distinguishes itself from current building – as an upper level – because it has some kind of deeper meaning, distinct from simple function. The problem is thus how to acquire, on an intersubjective basis, this meaning: how can I establish that the meaning that I read in a particular piece of architecture has something in common with the reading of someone, so that we can discuss the matter and hope to agree on it? This is not only a philosophical problem, because it has direct repercussions in the field of Architecture: namely in didactics, architectural criticism (which relies upon the possibility of a common reading of pre-existing architecture); and, acutely, when working with pre-existing pieces of architecture (conservation and rehabilitation of monuments or old buildings) because then we feel obligated to realize the meaning of the pre-existing architecture, so as to preserve and forward this meaning into the future.

In analogy with the modern research trend on eye movement pattern analysis induced by the viewing of pictures, we propose a theoretical model for architectural perception, which we intend to verify empirically.

Gesture
Reflecting on architecture, Paul Valery recognizes that some buildings are silent, others speak, and yet others sing1. We believe that “singing” is not a mere superlative degree of a hierarchical scale of arquitecturality; we consider that it is an identity attribute. Further ahead, in fact, this author associates architecture with music, as the only two forms of art capable of producing an ambiance, an atmosphere. We believe that it is in this capacity for creating an environment that lies the fundamental principle of the architecture’s specificity. We will use as a starting point the authorized vision of Valery to allegorically describe the endogenous process of communication of architecture with the Self and in this way describe its identity.

The first phenomenon – which is still common to the experience of the majority of works of art – is silence: the suspension of the noise of our thoughts, the interruption of that conscious yet inadequate mental activity that is a non-being; the wonder which cuts the noisy and careless flow of the world around me. After the silence – i. e. inside it and as a cause for this silence – the piece of architecture makes itself heard by singing. However, the image of an erudite chant is not adequate, since this music asks for a dance: the rhythm and melody of this chant are of such nature that they lead the most inner most specific

1«Dis-moi (puisque tu es si sensible aux effets de l’architecture), n’as-tu pas observé, en te promenant dans cette ville, que d’entre les édifices dont elle est peuplée. Les uns sont muets, les autres parlent, et d’autres enfin, qui sont les plus rares, chantent? – Ce n’est pas leur destination, ni même leur figure générale, qui les animent à ce point, ou qui les réduisent au silence.». (Valery, 1996, p. 29)
characteristics of the Self to make a movement, both internal and external, conducted by the said piece of architecture.

Architecture does not withdraw itself from this dance: for it is as if the work radiates a personality which, by its grace leads the dance. Nevertheless, the presentation of the work is not limited to its chant; this chant is only the first sign of its presence. In fact, it is through the unity of its gesture that the work of architecture fills the reader with curiosity: it is not singing to me, hoping that I will listen; it is introspectively humming to itself, pursuing its own motion to the sound of its own tune; it is this particular manifestation that attracts me: its posture, its balance, the entire expression of a Self in harmony with itself and the world. Its personality is what is appealing to me, not its message; the being, not the saying, nevertheless, its look is not lost in the void, in superior sufficiency: the personal radiation of the work of architecture tacitly reveals sympathy, empathy, even understanding – through the rhythm and melody by which it moves and the grace of its motion; it invites us to its acquaintance. So it is not sufficient to listen to it and understand it; we must follow it, dwell it; we have to allow ourselves to be taken away and dance with it.

Then, in that glade of silence within the Self, in that opening in the nonsense of our living, those most original and inherent parts of myself which were suffering, chained and put aside by the chores dictated by the outside world, orderly begin to wander around, co-embedded in the tune of the work of architecture, as if awakening, pursuing the drive of the personal spirit of that piece of architecture – like the dancing spirits in Matisse’s painting. What we feel at that moment is freedom and peace, almost a edenly nudity.

This is where architecture begins to individuate itself: although other forms of art also induce “dancing”, only architecture is capable of producing this “dancing-with”. It differentiates itself from music, as regards the ability to create an atmosphere, exactly in the peculiar way in which it does so: by becoming the other, by whom the Self is warmly welcome, thus creating an ambiance.

The preceding analogy with dance is not as inappropriate as it seems, given that – like some melodies induce motion and feelings of a certain kind – it is by suggesting particular gestures, particular "e-motions", that architecture begins to relate to us, to reveal its being-for-me.

The shape of architecture conveys a rhythm and a tone, which constitute what the piece of work primarily communicates to whom is experiencing it. The response to this rhythm and tone can be perceived through the internal and external movements of the person who walks through the building.

The tone corresponds to the general affective hue of an environment – its "colour" –, which steadily and significantly affects our perception. Tone is the first element of the feeling conveyed to us by architecture. This is why we sometimes refer to an atmosphere as being ‘warm’ or ‘cool’, ‘vibrant’ or ‘serene’. Within our experience of an environment, tone somewhat determines the speed of our movements; rhythm will determine its accelerations.

Rhythm is related to time. It derives from the intensity and frequency of stimuli and is materialized in the type of walking and visual movement that it causes in the subject who perceives the piece of architecture.

The way in which the work of architecture affects us – which we have designated as tone – is different from rhythm mainly because of its stability over time – like the dominant colour in a painting, perceived by squinting at the image. If the building consists of a single area, this room has a background atmosphere with a specific character. If it has a number of different areas, each one of them has its own global ambiance quality – its own tone.

Rhythm may exist inside a room – in its shades and contrasts with the background colour – but its most remarkable function is the separation of various atmospheres, organizing and directing the subject’s trajectory.

The way in which tone (or tones) and rhythm (or rhythms) are arranged (i. e. how stimuli are distributed spatially and also, through the sequence perceived, temporally), inducing variations in the
The organized sequence of stimuli (with different shades) that we designate as “melody” guides the reader’s feelings. Through its “melody”, the piece of work no longer simply makes a direct impression on the subject, as it does through tone (which establishes the affective hue of each room) and rhythm: (which governs the pace and variation of this hue). The repercussion of the “melody” is more personal. It starts by inducing a particular mood, modelling and guiding it afterwards — as in a waltz —, subsequently offering a path of life, the shades of a state of mind, a trail of existential understanding of the Self, of culture, of mankind.

The concept of “melody” helps us to explain our idea of gesture.

What we designate as gesture is the inner and outer mutation (in space and time) of the subject — both movement and feeling — induced by architecture, through the layout of tone and rhythm set in a kind of “musical phrase”. Gesture is the organized chain of movements — walking and looking — and feelings — caused by the manner how we are affected by the almost-personal character which mysteriously animates a place (a character which may be light or heavy, dark or luminous, happy or sad) It is through gesture that a piece of architecture communicates itself to the subject who perceives it as architecture; and gesture is directly produced by architectural form.

We must emphasize that these im-pressions of the piece of work, in addition to being determined by it — for they are the trigger of the compound of movements and feelings, i. e. of the gesture —, present themselves as an organized sequence, meaning that its position in time in not arbitrary: the building leads us to initiate our experience at a certain point, to take a particular path among all the theoretically available paths and to eventually come to a destination. It is this sequence of the stimuli in time that allows us to use the expression “melody”. “Melody” is the significant presentation of the work of architecture to the subject; gesture is, in turn, the subject’s response to the work’s “melodic” appeal.

Therefore, through the arranged sequence of its elements, “melody” tells a short story: a series of events which take place in a coherent succession and propose an outcome. This short story is already analogous, to some extent, to the spiritual life of the reader; it demonstrates the existential relevance of the work of architecture to the Self — this is why we consider that “melody” contains a meaning.

If we consider that a work of architecture is capable of producing a “melody” and has the ability to cause a gesture — an arranged sequence of movements and feelings — then it is easy to admit that this sequence conveys a message, a meaning (order is always meaningful). Hence, the meaning of the piece of architecture comes directly from the work itself and what strictly belongs to it, i. e. its form: not from the artist’s intention or other. Gesture corresponds thus to the immediate repercussion of the piece of architecture on the subject — not because it is evident or easy, but because nothing stands between the piece of work and the subject (other than himself). Therefore, being aware of gesture is the crucial tool to realise the meaning of a work of architecture; gesture is the direct assessment to meaning in architecture.

Gesture makes it possible to seize a work of architecture, for the work is imprinted in us through the motion and feelings that it generates, but not to understand it. Gesture is the work’s most distinctive and direct result, which potentially conveys the work’s nature. However, it cannot be truly apprehended by the subject, since it has not yet been incorporated as a meaning; its relevance to the subject is yet to be determined.

While the piece of architecture is already active upon the subject — which can be observed by means of a vague attraction, a desire to revisit it — it is so at a subliminal and unconscious level. Although it

2 The word “melody” is not typically used in the context of the architectonic speech. Due to the fact that it is intended to have an analogous character, will shall always put it in inverted commas; this also implies we mean to keep its musical root.
already participates in the subject’s life, this does not occur on a conscious level, and the subject cannot voluntarily make it participate in particular moments of his life, in which it could possibly be useful (regarding which the said work of architecture is a monument).

To make this happen, it would be necessary to understand the meaning of the gesture: the existential logic of that induced e-motion.

**Philosophical context**

The theory set forth above follows a philosophical line which sees the body as the fundamental link to space, the means through which we understand its identity and meaning. Whitehead was perhaps the first philosopher to bring the bodily activeness to light – the body is no longer a mere receiver of stimuli; it becomes an active participant in perception, seeking through reality (Casey, 1998, p. 213).

Husserl spots the importance of kinesthesia, the bodily sensation of movement. The way in which our body feels while it stands and moves in any given place has much to do with how we experience it and get to know its identity. He writes: “The place is realized through kinesthesia, in which the character of the place is optimally experienced.” (Casey, 1998, p. 219).

Merleau-Ponty systematized later many ideas previously drafted by Husserl. Our bodies know the places that we inhabit – we must be embodied in order to inhabit. In fact, the body is so important that it has its own intentionality, different from the mind’s intentionality.

Merleau-Ponty asserts that it is the way in which our body reacts to the environment that makes it realize the environment. He refuses the traditional linear causality which says that our body reacts to outside stimuli as a simple relation of cause (environment) / effect (reflexive reaction). We could say that our movements are caused by external stimuli, but the stimuli that we receive are there because of the movements that we previously made. Causality is thus circular, not linear.

Mark Johnson notices that sensory-motor systems are the basis for our dialogue with the world. These systems are common to all human beings, which means that we tend to read situations in a similar way. There is a specific human way of being embodied – a “tactile-kinesthetic” way (Johnson, 2007, p. 276). It shapes our perception of the world and creates a human, intersubjective meaning out of things.

Christopher Alexander introduces the concept of pattern of events, which describes actions that are repeatedly performed in a certain room. Events are inseparable from where they occur. “The action and the space are indivisible.” (Alexander, 1979, p. 70). He also introduces (1979, p. 263) the concept of ‘morphological feeling’ – a feeling that is connected to a particular geometric configuration. This explicit connection between architectural form and personal experience nearly defines the substance of our concept of gesture.

Alexander’s concept of pattern itself is in harmony with our theory of gesture. Patterns correspond to timeless ways of building, which derive from timeless ways of dwelling. He recognizes the connection between formal patterns and behavioural patterns, even if he does not always analyse the psychological causes behind this behaviour. Furthermore, the pattern formulation method (1979, pp. 270-271), which closely links formal structure and felt experience, is roughly coincident with our process for discovering meaning through ‘gesture’.

Alexander is almost exclusively concerned by the process of architectural creation and therefore his theory was not directly conceived to be applied to the reading of pre-existing works of architecture. Alexander’s concept of pattern of events is understood as a starting point for designing works of architecture; for us, this is a means through which we become aware of the influence of space on human being and come to understand the meaning of this space.

**Empirical investigations**

In the 1950s and 1960s, Alfred L. Yarbus made an extensive investigation about how people look at complex pictures, and found out that eye movements form a consistent pattern. (Yarbus, 1967, p. 171-175) Instead of exploring the whole image, the eye repeatedly returns to the same few elements. Perception is made of cycles which are dependent on the image: each picture spontaneously generates its own visual pattern. He observed that this pattern is repeated, with deviation, by different subjects.
Noton and Stark (1971) analysed the sequential nature of eye motion and, like Yarbus, saw those perceptual cycles, which they named “scanpaths”. Each image suggests its own sequence, which is recognizable from subject to subject, with variations. Brant and Stark (1997), and later Kapoula, Yang, Vernet and Bucci (2008), observed that these eye movements are also reproduced by our eyes when we imagine the image previously seen. This findings support the supposition according to which scanpaths reveal inner mechanisms of object comprehension and memorization.

We intend to test this thesis in the realm of architecture.

**Hypothesis and Proceedings**

We are convinced that if we record the motion of different subjects freely exploring an architectural space, we will be able to make out a common pattern, revealing in which way our body reads the whole group of stimuli presented by the building and responds to it. Surely the sequence would not be equal for every subject, but nonetheless there should be consistency of results.

The experience will take place at several stages, one for each building, until we achieve a statistically representative number of buildings. We will select buildings that are incontestably monuments, since they have greatest general approval and thus we believe that the gesture that they generate might have a bigger intersubjective potential. At the first stage we will test the hypothesis regarding the Church of the Monastery of Alcobaça (a Cistercian medieval church).

Due to the innovative nature of this experiment and the ensuing uncertainties in the formulation of methods and results to be obtained, we expect to perfect the experiment over time. After the first results, we will also, of course, be in a better position to adjust the ‘gesture’ theory.

**Materials:** In order to carry out this experiment, we would require an apparatus that records both the subject’s successive positions while walking through the building and what he is looking at, without compromising the subject’s freedom of motion. In 2002, an experiment took place at the Rochester Institute of Technology in which an eye tracker that allowed the subject complete freedom of motion was custom made (Babcock, Lipps and Pelz, 2002). We expect to put together a mechanism of the same type, also including a GPS tracker to record the subjects’ locations.

The tracker used in the RIT experiment was attached to a pair of racquetball goggles. They supported an optics module with an infrared illuminator, a miniature CMOS IR-sensitive video camera and a beam splitter (used to align the camera). A first-surface mirror, also attached to the goggles, sent an IR light beam to the pupil and reflected its image back to the camera. To record what was seen from the subject’s point of view, another camera was located next to the subject’s right eye. The scenes captured by this camera were superimposed to a pair of crosshairs which translated the subject’s point of gaze. A laser/diffraction grating system was used in order to achieve more accurate calibration. The subject also wore a backpack with a modified Applied Science Laboratory 501 control unit. Scenes from both cameras were superimposed and a joint record created; this scene showed which point in the field of view was being fixated by the subject.

Simply put, a first camera recorded the subject’s eye, while a second camera recorded an image that corresponded to the subject’s field of view. Then, the eye scene and the environment scene were superimposed in order to learn which part of the field of view was being fixated at each moment by the subject.

**Participants:** We intend to use random visitors (who will agree to use the apparatus during the visit), divided in two groups: those who have never been in the building and those who have been there before. The occurrence of a statistical representative number of looks to the same place in the same sequence will corroborate the hypothesis raised with regard to this building.

**Variables:** No time limit will be established for the visits, so it is expected that they will vary a lot in length. Although we consider the non-imposition of a time limit to be an advantage spontaneity-wise, it makes the task of comparing trajectories more difficult. The information recorded will be superimposed to a
3D computer model of the building, in which we shall mark the subjects’ positions in the building and their gaze path. While analysing this data, the most important task will be to verify the existence of a sequence, i.e. whether subjects tend to go from point A to point B and from there to point C and so on. In addition with the walking path, we will also try to understand whether the gaze path of the various participants is coherence. We will realize which architectural features receive more fixations and what influence they have in the subsequent trajectory.

**Conclusion**

We suggest the concept of *gesture* as an intersubjective basis for interpretation of architecture. *Gesture* is the chain of movements (walking, looking around) that a person makes when experiencing an architectural space, being induced by the space itself and also encompassing emotional effects. It corresponds to the immediate repercussion of a piece of architecture within the subject, the connection established between architecture and our body. Since all human beings have essentially similar sensory-motor systems, we share this motion, we can all relate to it. This makes *gesture* a universal and shared basis for further interpretations and therefore to assessment of meaning.

Taking cognizance of the *gesture* caused by a piece of architecture is the first step to the comprehension of its meaning. Nevertheless, it is subsequently necessary to understand which is the existential logic of that induced *emotion* – what kind of content it conveys. Regrettably, in this paper we will not have the opportunity to further explore the methods which allow us to understand to meaning of a work of architecture through the study of its *gesture*.

For the purpose of testing this theory, we intend to record the movement of a number of subjects inside a building, so as to verify whether there is a common pattern. As mentioned above, there is a discrepancy-tolerance and a large number of experiments at the same site would be necessary to either refuse or support this theory. Furthermore, experiments must be carried out in different buildings, so as to confirm whether our hypothesis is universal or only applicable to some spaces.

Should our theory prove to be valid, *gesture* would make it easier for us to realize the “melody” of a building and, in addition to with an historical and intellectual investigation, enable us to become aware of the human significance of the building.

**Bibliography**