

Five Orders of Architecture: an Evolutionary Theory

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Prologue

Histories of architecture normally start with ancient Egypt and Sumer while the prehistory of architecture is compressed in the myth of the "primitive hut".¹ This is a pity; thanks to the wealth of evidence unearthed by archeologists during the past 150 years, a great deal more can now be said about architecture's archaic origins. To gain insight into architecture's present and future, it is necessary to adopt a macro-historical viewpoint, bringing the discipline's most humble beginnings into awareness, the vast epochs of vernacular building which, arguably, still determine our design attitudes on an instinctual level.

Archeology shows that the emergence of material culture has proceeded with sudden leaps, the most well-known of such leaps being the agricultural revolution which took place from around 12,000 years ago. The pattern of long periods of stasis, alternated with sudden leaps into novelty, is known as "punctuated equilibrium", a term originating with evolutionary biology.²

Since the late 19th century, when Banister Fletcher published his, now controversial, evolutionary "tree of architecture",³ architectural theoreticians, too, have appropriated the terminology of evolutionary biology. Jeffrey Kipnis compares the immense diversification of architectural styles during the last three decades to the Cambrian explosion, that famous evolutionary event which saw the sudden emergence of many new "blueprints" of animal anatomy.⁴

Thinking about the transformations of material culture as an evolutionary process makes intuitive sense, but the one-on-one adoption of biological concepts is problematic; they can, at best, be helpful as metaphors. That is, if we adhere to the neo-Darwinist view of evolution as a blind process governed by the interplay of random mutation and natural selection. It is certain that selective forces are operating in the field of culture, but pairing the agent of cultural innovation, human consciousness, to random genetic mutation is not as straightforward.

One possible way out of the conundrum is offered by Brian Swimme and Thomas Berry in *The Universe Story*.⁵ The book reintroduces the notions of progress and purpose, outlawed since Darwin, to evolutionary thought. If we have the audacity to become evolutionary heretics, it becomes possible to view the unfolding of material culture as fulfilling a cosmic destiny. The grand narrative of cosmic evolution has the potential of bringing a renewed sense of orientation to the field of (architectural) design. If we view cultural and biological evolution as obeying a singular universal order, the peculiar fact that both are structured as a series of punctuated equilibria suddenly makes sense.

I am proposing an evolutionary theory of architecture with a strong focus on the prehistory of building. My theory describes five "orders" of architecture in a sequence of punctuated equilibria. Attempting to lay solid empirical foundations for the proposed system, I draw upon the empirical data as well as the nomenclatures of academic archeology. I do, however, distance myself from the neo-Darwinist paradigm current in archeology, which tends to explain cultural shifts strictly in terms of adaptation to changing environmental conditions.

To my mind, there is a sense of progress and purpose to the evolution of culture, of biology and of the Cosmos. While the career of culture may be subject to environmental influences, I believe it is driven by an autonomous inner force residing in consciousness, which strives for the realization of its latent potential. My thinking is informed by the philosopher Jean Gebser (1905-1973), who described the unfolding of the human mind in his magnum opus, *The Ever-present Origin*.⁶ Gebser identified five "structures of consciousness" (the archaic, magic, mythical, mental and integral structures) in a broad analysis of the history of literature, music, art and science. He avoided the words "evolution" and "progress", partly because of their misuse by fascist ideologies, partly because he felt they were not sufficiently accurate in describing, in Gebser's words, the "apparent succession of our mutations".⁷ Origin is not located somewhere in the distant past, but is ever-present. Gebser saw a new ontology, the integral structure, manifesting in the art and science of the twentieth century. Among others, he saw the dissolution of perspective in cubism and the free-flowing spatial continua of modern architecture as manifestations of the integral mind. The integral mind is transparent to all "preceding" structures of consciousness, "down" to the archaic mind, to origin.

The First Order

Evidence for the use of fire pre-dates the evidence for huts more than a hundred thousand years. The story of architecture has to start here, with the point-like center, the focus of social life, source of light and warmth, of protection against a hostile environment. In other words, the first order of architecture was established in the Lower and Middle Paleolithic, roughly between 1 million and 100,000 years ago. I relate the first order to Gebser's initial, archaic consciousness structure.

The first hominins to colonize Eurasia were probably groups of *Homo ergaster*, some 1.5 million years ago. It seems likely that the control of fire was what enabled them to colonize cooler regions, although unequivocal proof for hearths occurs not earlier than about 150,000 years ago, in the Middle Paleolithic, at cave sites belonging to *Homo neandertalensis* such as Le Lazaret in southern France.⁸ We see the beginnings of ritual; the first burials were performed in this period.⁹ To my mind, the simultaneous occurrence of fireplace and burial in the Lower Paleolithic already hints at the presence of a bipolar structuring of consciousness, *domus* and *agrios*.¹⁰ This is perhaps incongruent with Gebser's characterization of the archaic structure as "a time of complete non-differentiation of man and the universe."¹¹

The fireplace became the magnetic point around which life was organized. To be able to contain this force of nature, radiating heat and light, surely impacted the psychology of ancient people in a major way. It was a game-changer in terms of self-confidence and power, relative to the often inhospitable and hostile natural environment. Is it possible that fire played a key role in the emergence of human consciousness? This idea is present in Vitruvius, according to whom the "invention" of fire catalyzed the forming of communities and the emergence of language.¹²

To make the transition to the second order, I quote Rykwert's account of the rudimentary architecture of the Aranda, contemporary Australian natives: "*The only shelters they put up for their own use are windbreaks of bush and scrub which are made by weeding and trimming as much as by piling up. They sleep out in the open, sheltered by these breaks, with small fires to warm them up in cold seasons. These breaks also play an important part in the "construction" of their ceremonial grounds.*"¹³

The Second Order

The second architectural order emerged in the Upper Paleolithic, roughly 100,000 years ago. The second order is the building as circular circumference, exemplified by the nomad's hut. The fireplace sits at the center of the hut like an embryo. Simultaneously, as an expression of the first order, it is the umbilical cord and the mother. Contemporary Asian herders living in yurts, during certain ceremonies, will erect a birch tree on the site of the fireplace, projecting out through the smoke-hole. It is the axis mundi, the world tree, connecting the spiritual worlds above and below.¹⁴ The central location of the fireplace has meanings transcending the practical.

I connect the second order to Gebser's magic consciousness structure. *"Here, too, lie the roots of that tragic entanglement of fighter and fought: to ward off the animal that threatens him – to give but one example – man disguises himself as that animal; or he makes the animal by drawing its picture, and to that extent gains power over it."*¹⁵

The rise of Homo sapiens in the Upper Paleolithic is associated with a proliferation of cultural output. Tools made of stone, bone, ivory and wood become extremely detailed in form, and varied in function. We all know the "Venus" figurines from this period, and the famous cave paintings. Domestication of animals, primarily the dog, is likely to have started in the Upper Paleolithic.¹⁶ People lived in relatively small groups as food gatherers, hunters, and possibly herders. They (or "we") constructed mobile huts or tents with a circular plan, forerunners of contemporary nomadic dwellings such as the Mongolian yurt.

Complex camp sites from the Upper Paleolithic are known from locations across Eurasia. Animal figurines of fired clay, and impressions in clay of basketry and textiles, date back as far as 27,000 years ago at sites in the Czech Republic. Two infants buried around 24,000 years ago at Sungir, Russia, were honored with red ochre, numerous fox teeth and objects made of mammoth ivory and bone.¹⁷ At the Russian site Kostenki I a camp was found, consisting of several semi-subterranean dwellings constructed from mammoth ribs and furs.¹⁸

The circle is the sun, the moon, the womb, it is infinity. For the builders of the following order, the third, it was to become the preferred shape for sacred space.

The Third Order

The emergence of the third order, the rectangular building plan, coincided with the rise of agriculture following the end of the last Ice Age, some 12,000 years ago. The earliest moment of transition from round to rectangular architecture has been pinned down to the ninth millennium bc, the Mureybetian culture in present-day Syria.¹⁹ The site of Jerf el Ahmar provides a beautiful example of the "invention" of the rectilinear, a metamorphosis that took several centuries to complete. The site consists of some sixty architectural units distributed over several levels. Danielle Stordeur gives the following description: "*The first four [levels] have only produced round constructions. The three following have constructions with rectilinear interior walls and fairly straight exterior walls, articulated by large curving angles. In level O/E the first strictly rectangular constructions appear.*"²⁰ (Fig. 1).

Archeologist Jacques Cauvin observes the fact that circular, semi-subterranean dwellings were replaced by rectangular ones, now placed above ground on the earth's surface: "*We must not forget that when rectangular architecture appeared at the end of the Mureybetian period, it had never before in any way existed in the world, but then it very rapidly became the archetype of the human house. In that way sedentary people left the hole of their origins and the circular matrix of their first homes.*"²¹

Cauvin's statement resonates with Gebser: "*Strictly agricultural cultures ... already take part in the mythical structure: they are matriarchal societies which are more consciously harnessed to the temporicity of growth and decay than those of the animal breeders and are more closely attuned to the maternal realm of the earth. Here arise the vegetative myths as well as a dawning awareness of the dark, subterranean realm that bears its fruits above ground.*"²²

Interestingly, both Cauvin and Gebser speak of an emergence from the subterranean, from the womb of mother Earth, as it were. Whenever the transition to a new order is made, the previous orders are viewed in a new light. It happened to the fireplace when it took up its central position in the paleolithic hut. And it happened in neolithic societies, when the circular plan was reserved for sacred spaces such as the famous stone circles of Avebury and Stonehenge. In later times, the second-order circle would maintain its special status in architecture, often nested within the third-order rectangle. Palladio's Villa Rotonda comes to mind, as does Le Corbusier's Palace of Assembly in Chandigarh and the Glass House by Philip Johnson.

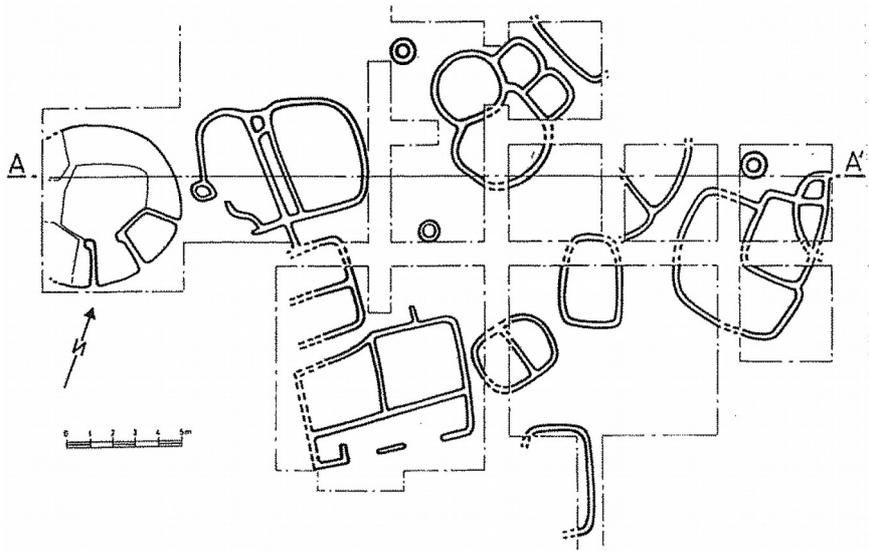


Fig. 1. Village I/East, Jerf el Ahmar (Stordeur, 2000).

The Fourth Order

Metallurgy started with the use of copper in Mesopotamia around 6000 bc, in the Chalcolithic Age, followed by bronze in the Early Bronze Age around 3000 bc. The emergence of cuneiform script out of pictorial writing is attributed to the latter period. Metallurgy may have evolved independently in Egypt, although connections with Mesopotamia did exist.²³ The pyramidal structures of Egypt and Mesopotamia appear like representations of the hierarchically stratified societies that produced them. The design of the stepped pyramid at Saqqara, 60 meters in height, is attributed to architect Imhotep around 2500 bc; architecture is now an official discipline. We have entered the fourth order.

The fourth order is an extrusion of the third and a negation of the second: circular forms seem to disappear from the architectural repertoire. The fourth order corresponds to Gebser's mental structure, in which three-dimensional, perspectival space is discovered: *"The ring is broken, and man steps out of the two-dimensional surface into space, which he will attempt to master by his thinking. This is an unprecedented event, an event that fundamentally alters the world."*²⁴ Buildings are now conceived as three-dimensional solids; facade and section become important. They exhibit monumentality for the first time.

The fourth order is further characterized by the emergence of the city. Roger Matthews writes: *"Although we find large agglomerations of people much earlier, for example at Çatalhöyük in the neolithic period of Anatolia, it is only in Late Chalcolithic Mesopotamia that we can detect a real multiplicity of function within those settlements, which enables us to identify them as true cities."*²⁵ The verticality of neolithic mound ("tell") sites such as Çatalhöyük was the spontaneous result of stacking many successive generations of mud-brick construction. Perhaps the tell phenomenon, as a faint and distant memory, foreshadowed the intentional emphasis on verticality that begins to appear in the Ubaid period (5000 – 4000 bc) in Mesopotamia. In their intricacy and symmetry, the temple complexes of the Ubaid period are clearly different from the organic agglomerations of the neolithic. Gwendolyn Leick describes a fifth millennium precursor of the ziggurat at the site of Eridu, now southern Iraq: *"all the earlier ruins were filled in with sand and enclosed with a brick wall, to provide the basis for a new building elevated from the surrounding areas by one meter and accessed by a ramp."*²⁶ (Fig. 2). In the subsequent Uruk period (4000 – 3000

bc), the ziggurat typology would materialize: a solid stepped platform in sun-dried brick, topped with a shrine.

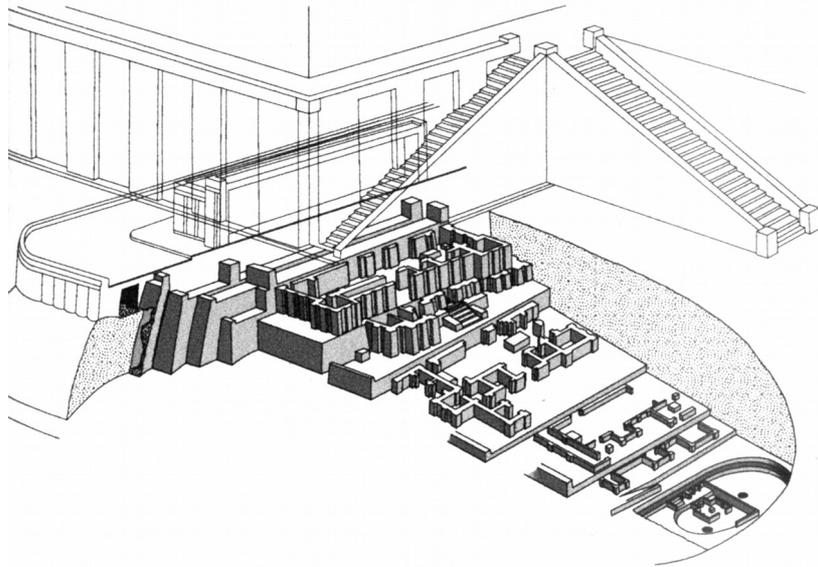


Fig. 2. Schematic drawing showing the superimposed architectural remains of the Eridu "temples", from the prehistoric period to the Early Dynastic and the Ur III periods (Leick, 2002).

The Fifth Order

Jean Gebser detects the shift from mental to integral consciousness in modern architecture:

*"The new conception of space based on the new valuation of time has led to what is today called a "free plan". In other words, time, to the extent that it is expressible architectonically, has transformed closed, three-dimensional architectural space into dynamic, open space-time."*²⁷

The fifth order encompasses both "modern" and "postmodern" architecture. It strives for transparency and weightlessness, for dissolving the solid into floating planes or pixels. The Blur Building by Diller Scofidio + Renfro, at the 2002 Swiss Expo, is a compelling case of architecture's current dematerialization. Frank Lloyd Wright's pioneering language of interpenetrating solids and hovering planes was paralleled by a European avant-garde post World War I.²⁸ Theo van Doesburg stated in 1924 that the new architecture *"acquires a more or less floating aspect that, as it were, works against the gravitational forces of nature."*²⁹

The fifth order disperses perspective and abolishes symmetry. Jan Rietveld, travel companion of Aldo van Eyck, describes a significant incident that occurred in the Algerian desert in the 1950's: *"The crazy thing about absolutely nothing is that you are totally surrounded by a continuous horizon, and you feel, as you ride in a truck, like the compass point at the center of a gigantic and slowly moving circle. Aldo found it oppressive. At a certain point he leapt out of the truck and walked some way off into the desert. He was trying to escape that compass point."*³⁰ Here we see the notion of decentralization; in the fifth order, the point gets detached from the center of the circle. In the words of Herman Hertzberger: *"Were not round spaces always chosen, consciously or unconsciously, to stress a central point, thus establishing a spatial hierarchy and subordinating what is there all round? In the early 20th century architecture shook off the bonds of rigidly centered spatial systems, the way Schönberg freed music from the burden of tonality."*³¹

The presence of the past,³² due to the transparency of the integral mind, is an essential characteristic of the fifth order. In the years following World War II, incidentally the time of publication of Gebser's *The Ever-present Origin*, members of the international CIAM movement stressed the need to connect with origin. Sigfried Giedion was researching "the eternal present" and, in the words of Francis Strauven, *"the original archetypes of art and architecture ... the primal, prehistoric forms that he saw simultaneously re-emerging in the art of the contemporary avant-garde."*³³ Meanwhile, Japanese tradition and the legacy of the Western avant-garde were brought to

a synthesis by the Metabolists in post-war Japan. For all its futurism, Metabolist architecture embodies ancient Oriental notions of impermanence. Ise Shrine is essentially a neolithic house with a continuous existence of 1200 years, its material constituents being replaced ("metabolized") every 20 years.³⁴ It served as an important model for the Metabolists. Kenzo Tange: *"In the same way as life, as organic beings composed of changeable elements, as the cell, continually renewing its metabolism and still retaining as a whole a stable form – thus we consider our cities."*³⁵ Tange's 1960 plan for Tokyo³⁶ shows how the expansion of the metropolis can be conceived as a living network of mycelial connections (fig. 3). The notion of the built environment as essentially a part of biology will, I think, not lose its viability. It is consistent with the idea of an evolutionary architecture.

Epilogue

Driving through the urban sprawl of North America, with its McMansions and mute, symmetrical office towers, one has to draw the painful conclusion that a majority of architects still operates within the confines of the deficient fourth order.

On the other hand, those working from the integral mind are producing fifth-order architecture. They are doing away with centralized hierarchical organizations of space, destroying symmetry. They are making their buildings float, making them transparent, not just to their physical surroundings but to the past, and, who knows, the future.

A fifth-order design carries traces of the entire evolutionary career of the discipline, all the way back to the Lower Paleolithic, when early members of the genus *Homo* mastered the use of fire. The point, the circle, the rectangle, the pyramid, the mycelium, I have attempted to show that these elementary motifs are tied to different chapters in the evolution of human consciousness. Architects will never (never?) stop using them; knowing where they originate will make their employment ever more deliberate and meaningful.

Architects conscious of the evolutionary momentum of which they are both the product and the agent will be cured of the "originality syndrome" Winy Maas warns us about.³⁷

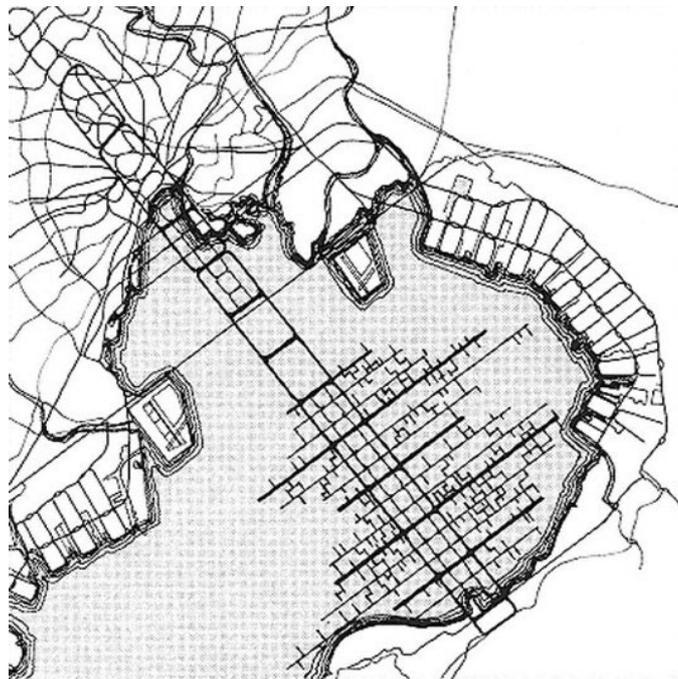


Fig. 3. Plan for Tokyo by Kenzo Tange, 1960 (Koolhaas and Obrist, 2011).

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- 8 Scarre, C., ed., *The Human Past* (Thames & Hudson, 2005), pp. 115-116.
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- 22 Gebser, p. 305.
- 23 Rykwert, p. 170, also Scarre, p. 372.
- 24 Gebser, pp. 75-76.
- 25 Scarre, p. 439.
- 26 Leick, G., *Mesopotamia* (Penguin, 2002), p. 6.
- 27 Gebser, pp. 466-67.
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- 29 Ibid., p. 149.
- 30 Strauven, F., *Aldo van Eyck* (Architectura & Natura Press, 1998), p. 147.
- 31 Hertzberger, H., A. van Roijen-Wortmann, F. Strauven, *Aldo van Eyck* (Stichting Wonen Amsterdam, 1982), p.18.
- 32 *The Presence of the Past* was the title of the first Venice Architecture Biennale and the associated publication, directed by Paolo Portoghesi, 1980.

33 Strauven, p. 238.

34 Koolhaas, R., H. U. Obrist, *Project Japan* (Taschen, 2011), p. 235: Noboru Kawazoe took the term *shinchintaisha* ("metabolism") from a Japanese translation of Friedrich Engels's *Dialectics of Nature*. Kisho Kurokawa speaks about the philosophy of impermanence behind Ise shrine and Katsura palace, *ibid.*, p. 385.

35 Kenzo Tange at the World Design Conference, Tokyo, 1960. Koolhaas and Obrist, p. 197.

36 Koolhaas and Obrist, p.153.

37 Maas, W., F. Madrazo, A. Ravon and D. Ibáñez López, *Copy Paste: The Badass Architectural Copy Guide* (The Why Factory, 2017).