

Serge Monnot 

Ecole Nationale Supérieure d'Architecture, Lyon, France

Abstract: Through previous research, I have highlighted a complete analogy between two cosmologies: the Chinese 5 elements and the 5 Platonic solids, thereby linking the Chinese and Greek modes of thought. The correspondence between these two systems reveals an identical underlying structure that can only correspond to L.v. Bertalanffy's notion of the General System. To explore the possible applications of this General System to the field of engineering and architecture, I propose to interpret and optimise a theory that models creativity and design processes in a unified way. The aim is to consider how to put into analogical correspondence Hatchuel and Weil's C-K theory with the General System and to think about how to integrate into it the two archetypal modes of thought defined by L. Vandermeersch: Greek causal thought and Chinese correlative thought.

Keywords: CK theory, project design, innovation, General system, correlative thinking, Chinese elements, Platonic solids.

Serge Monnot

E-mail: serge.monnot@lyon.archi.fr

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Introduction (background, questions, previous research itinerary)

The developments in C-K theory that I propose in this article are linked to a teaching experiment in innovation methods and project design that I have been conducting at the École Nationale Supérieure d'Architecture de Lyon for the last fifteen years. These developments are also based on the results of earlier research, which argues in favour of a *rapprochement* (in the sense used by M. Serres) [1] *between Greek and Chinese thought*. To extend this research, we should first summarize its main principles.

Comparing Greek and Chinese cosmologies: two analogous systems

Because I was wondering about the choice of forms for the *design* of projects, I sought to establish a relationship between inhabited geometric forms and man – his organism and his relationship with the environment. I finally established an **analogical correspondence between the two cosmologies, Greek and Chinese**, which have underpinned these two cultures for millennia [2]. I showed that the two systems – *Platonic solids* and *Chinese five elements* (Wuxing in simplified Chinese, 五行) – are perfectly *analogous* from structural and functional viewpoints (Fig.1). Note that what has been translated as the 5 *elements*, particularly in France, does not correspond to the Chinese meaning. 五 (Wu) means five and 行 (xing) means *rhythm, process, movement...* and is often translated by European sinologists as *agents* or *phases* [3].

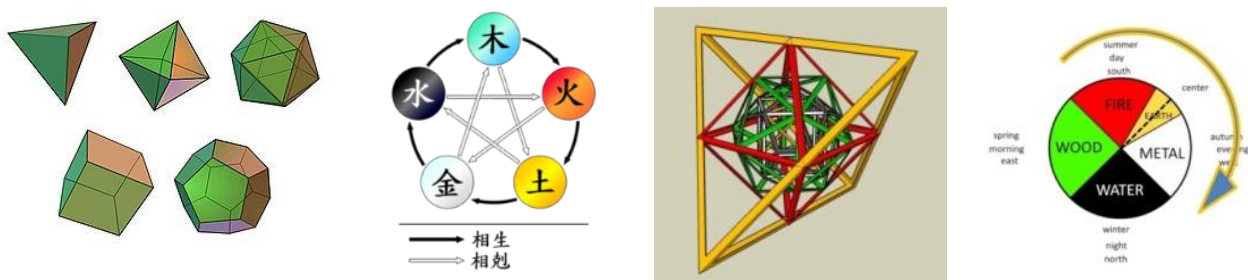


Fig. 1. On the left: a common representation of the 5 Platonic solids and the 5 Chinese elements (Wikipedia). Right: temporal representations of the system of Platonic solids and the wuxing system as I developed them [4]

Causal and correlative thinking

These two cosmological models, Greek and Chinese, reflect and express two relationships to the world and two modes of thought based on different choices established from the outset. I propose to describe them as *duality* in the geometric sense or *antagonistic duality* in the sense of S. Lupasco [5]. Since thought is strongly correlated with the tools it uses to develop, these initial choices have been reinforced by two very different linguistic systems. Indeed, F. Jullien suggests combining the two terms into a single one, *language-thought* [6].

These two modes of conceiving the world – Greek and Chinese – have been identified by various sinologists: M. Granet [7], A. Graham [8], M. Porkert... In the end, it was L. Vandermeersch who defined more precisely what distinguishes them [9]:

- **Greek thought** is characterised, within a given *space*, by *causality*, i.e., by cause-and-effect relationships and *logical* transmissions *over time*. Chains of causality form the basis of *rigorous, scientific* Greco-Western thought.
- **Chinese thought** is characterised, over a given *time*, by *correlation*, i.e., relations of transmission across space, through phenomena of analogy and/or resonance. These chains of *correlation* form the basis of the *action strategy* developed by *Chinese* philosophy (*wisdom*) [10].

Chinese thought is just as *rigorous* as *Greek thought*, but it is a different kind of "scientific rigour", as L. Vandermeersch sums it up. He also explains that the Chinese use *correlative thinking* first and then, if necessary, *causal thinking*.

Notion of General System (GS) and contemporary systems approaches

This *rapprochement* between "*Wuxing / 5 Solids*" and "*Chinese and Greek modes of thought*" led me to conceive of these *cosmologies* as two *systems*, or more precisely, as two *models* [11], two *interpretations* [12] of the same "meta-system". I finally associated this "meta-system" with the notion of the **General System** developed by L. v. Bertalanffy in his main work, *General System Theory* [13]. It is therefore thanks to the *Solids/Wuxing* correspondence that I was able to "identify" this *General System* and that I am now proposing to apply it to the *design* process, using the *C-K Theory*.

Before developing this line of research, it is necessary to clarify a few important aspects linked to this notion of *General System (GS)*. The concept of a GS is not always well received as a plausible or even "conceivable" scientific hypothesis in the context of contemporary research [14], particularly by French epistemologists. J.-L. Le Moigne [15] is probably one of the scientists most involved in this fight against the very idea of a *general systemology* [16]. On the other hand, in some other disciplines, the hypothesis of a *General System*, as a necessary paradigm for *transdisciplinarity*, is seriously envisaged by the mathematician R. Thom, for example [17], or by the philosopher M. Serres, with the concept of the *organon* [18]...

As far as traditional Chinese thought is concerned, with a little common sense, it is easy to see that the primary and sought-after function of *wuxing* is exactly to be a *General System*, applicable to everyone. So why, for so long, has "Western science" been unable (or unwilling) to find a link between *wuxing* and Bertalanffy's *General System*? The only argument that can be put forward is that, as M. Porkert [19] points out, even if *wuxing* have existed for several thousand years, they are only "beliefs" and therefore have no value for *Western science*. The research I have been undertaking since the 1980s [20] proposes to provide an answer to this fundamental question, i.e., to provide *wuxing* with that *scientific* explicitness (in the Western sense) that the Chinese tradition has not invested in – since it based its own culture on another paradigm of thought, *correlative reason*. Building this *bridge* [21] between the Chinese and Greek cultural traditions establishes a new *key passage* between East and West (as the *Rosetta Stone* did between the Greek and Egyptian cultures), and this *passage* opens the way to new fields of research.

General system and definition problem

The theoretical advantage of "defining" a *general system* is that, based on its "mother structure", it is possible to interpret systems from any other disciplinary field to understand how they work. In principle, this is the strategy adopted by *traditional Chinese thought*. With this objective in mind, it has passed on the *wuxing system*: a kind of *organon* with a *representation* whose principles are as synthetic as possible. Following this postulate, the *wuxing representation* should therefore *be necessary and sufficient* to understand and use the *General System*.

But this is not the case. In reality, we can consider (from a Western point of view) that the *wuxing system* is only a "tool", it does not "define" the *General System* on its own. So China has only given us one piece of the puzzle (of this representation of the GS). The same applies to the Greek tradition, with that rather mysterious passage in the *Timaeus* about *Platonic solids*. We could ask ourselves why these Greek and Chinese "choices" were made, but that's not the point of this presentation.

To put this jigsaw together again – i.e., to obtain a *satisfactory representation of the General System* – I had to put the *wuxing system into analogical correspondence* with the system of *Platonic solids*. This was also a way (perhaps the only possible way) of providing a more rigorous foundation for *wuxing*, since the system of Greek polyhedra, which characterises the first regular forms of the 3D space in which we live, involves only purely geometric transformations [22]. At the same time, however, it makes it possible to develop a *representation of wuxing* that is as coherent as possible and therefore the most "efficient" from the point of view of the SG (see next paragraph).

This necessary dual approach illustrates the principle stated by M. Serres: it is impossible to know a system from a single representation, and this applies first and foremost to the SG. To "describe" a system, we need at least two representations: "*a topology and an energetics are enough*" [23]. We can consider that *wuxing* describes the energetic transformations of the SG and *Plato's system*, its topological transformations. The complete analogical correspondence between these two types of transformation highlights the existence of an *isomorphism* between these two *mathematical models*, it being understood that the Platonic system can be the *canonical representative*, "*as elementary as possible*", of this *equivalence class* sought by R. Rosen [24] (Fig.2).

But this *wuxing/solids isomorphism* is not enough to know about the SG completely; it only allows us to "identify" it, to describe its general morphology. Acquiring "total knowledge" of the SG is tantamount to *tending towards an infinite limit*: something that is concretely unattainable. C. Canullo points out that the more *translations* we have of a system (or, in our case, the more *representatives* we have of the same *equivalence class*), the more precise it becomes thanks to its different *interpretations* [12]. The aim of this article is, therefore, ultimately twofold: to deepen and perfect the operation of the C-K theory and also reciprocally to develop knowledge of the General System (the *truth* concerning knowledge of the General System being a "perspective" to be constructed progressively).

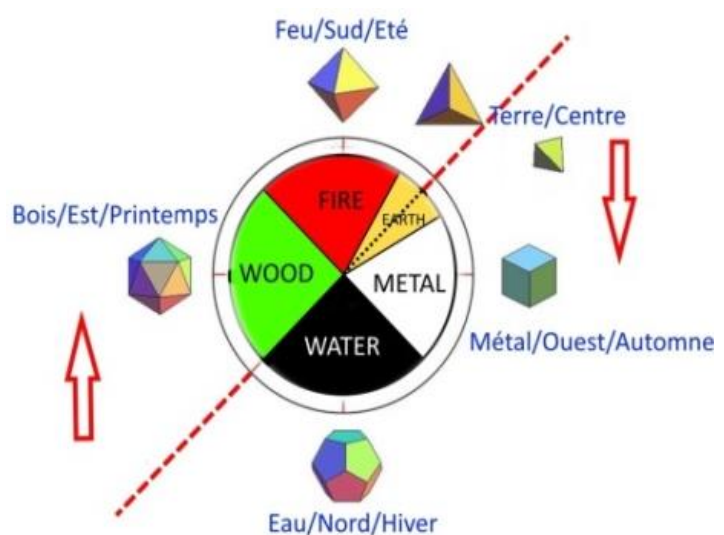


Fig. 2. Matching the Platonic solids with the temporal model of *wuxing*, showing a border separating the anabolic yang part on the left and the catabolic yin part on the right [25]

General system and representation problem

We have seen that, in principle, *wuxing* is the *synthetic tool* that should enable us to use the SG. But how do we *represent* the *wuxing* system? Our current understanding of *wuxing* originates in a very short, rather elliptical Chinese text [9], which is part of the Chinese book, *Shu Jing*. This *classic document* is thought to have been written by officials, and the current version is probably incomplete [26].

This text has given rise to numerous graphic interpretations, both in China and in the West. However, in my opinion, only the correspondence established with the *Platonic model* can make it possible to specify a coherent way of interpreting the functioning of the *wuxing* and to choose an appropriate representation. For the conception and representation of the *wuxing* (and therefore of the SG), I will rely mainly on the research of the French sinologist and physician J. A. Lavier [27].

This cycle of transformations, which corresponds to the *temporal representation* of *wuxing*, is conceived as a purely logical deployment that takes into account the data of time, space, the concept of energy (sender or receiver), and the situated presence of a conscious observer. This logical system can therefore be applied in other contexts. In the end, the SG is not such a *complex* structure to understand (in the sense of *complexus* [28]), as long as we take the trouble to specify some fundamental principles and express these principles with an appropriate graphical representation (Fig.3):

- The general orientation is correlated with the "orientations" of space and the "seasons" of time (also the hot/cold ratio) and is determined by the South at the top, because man, at the centre of the system, looks at the path of the sun from left to right.
- There are two zones separated by a 45° border. These two zones – which can be described as *yin and yang* – are two major *periods*, *active/passive* or *anabolic/catabolic* [29], with an upward "push" (*wood* and *fire* *wuxing* elements) on the left of the diagram and a downward tendency (*metal* and *water* *wuxing* elements) on the right.
- Traditionally, there are 5 elements (*phases, seasons, agents...* depending on the translation), but the *central element* is dual, meaning that the *same element* paradoxically has two modes of existence depending on whether it is considered to belong to the *yin* or *yang* category.
- There are 2 operators:
 - one main one, *generation* (temporal), which allows the different *phases* of the system to transform "from one to another" over time (*mother feeds son*) – thus allowing the system to reproduce itself cyclically,
 - and a *control* operator (linked to the spatial layout), which can be understood as a system regulation mechanism (*the grandmother controls the grandson*).
- There is a third type of "operator", linked to the *earth wuxing element*, which provides for the other *wuxing elements'* needs. Thus, through this *central element*, the whole system is "*animated from within*" by what Lavier calls the "*activating centre*", represented by the 45° border.

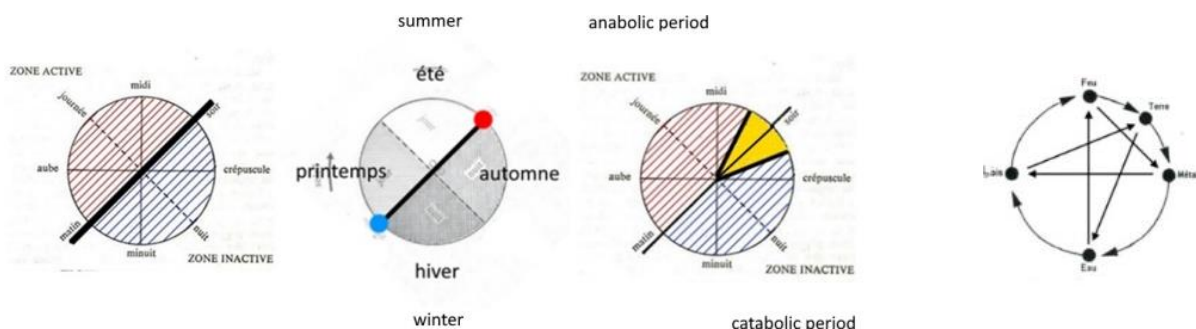


Fig. 3. Some characteristics of the SG developed from the *wuxing* temporal model: 1- on the left, the two main periods yang/yin and their border; 2- the 4 main phases; 3- the two main periods and the double centre in yellow. On the right: the two main operators are shown together (personal sketches based on Lavier [30])

Following on from this research, the idea of linking the two main modes of Greek and Chinese thought (*causal* and *correlative*) in a single *scheme* based on the *General System* architecture has become an interesting hypothesis to explore. All the more so since *CK theory* seems to provide arguments in favour of this hypothesis. In the following sections, I therefore propose to match the two *systems*, SG and TCK, and to examine how this *design theory* can be interpreted, according to the SG, and even reformulated, to better respond to the need to model "design processes". The aim is therefore to propose a new *interpretation* and a new *representation* of the CK Theory.

Reinterpreting C-K Design Theory (TCK): What strategies?

A formalism of "radical creativity": what's at stake?

In my teaching career, in addition to questions about the choice of forms, I have also been led to identify methods *for organizing* and *conducting* architectural design. In France today, engineers from the Mines de Paris are proposing a **general design method** [31], the *C-K theory*, and there are many reasons to study it:

- This theory is the French reference on an international scale: it is interpreted and pursued by several teams elsewhere in the world [32]. It has been criticised for aspects often external to its structure [33], but, to my knowledge, no study uses the approach proposed in this article.
- It aims to create a unified theory by integrating all the previous "theories of design": *brainstorming* [34], *discovery matrices* [35], *serendipity* [36], reasoning by *abduction* [37], and so on.
- According to the authors, the TCK theoretical framework combines, in a single model, the two antagonistic logics of creation: *that of the artist, who claims an ability to "see" new worlds*, and that of the "engineer, who claims an ability to create new knowledge" [34].
- It is therefore an essential methodological tool for training architects, engineers, and all designers (town planners, object designers, etc.).

In addition to all these aspects, and what is particularly interesting for this study, the graphical model of the TCK has many similarities in its structure and operation with the temporal model of the SG previously defined.

Similarities between the TCK and SG graphic models

Let's briefly summarize these similarities. In the TCK graphic model, as in the *General System*, there are two spaces in which two radically different systems of thought develop, and they are *separated* by a marked *boundary* in the CK diagram (Fig.4):

- 1. The *K space* consists of all the knowledge *already known*, on the right in Figure 5.
- 2. The *C space* (left) is the place where new concepts are formed, unknown before, and above all, "*undecidable*" from the point of view of their possibility of existence in the current context of science.
- In these *K and C spaces*, there is probably a set of transformations internal to the design processes. And we will assume that they are organized in a "continuum"; but the authors of the TCK have indeed "*identified*" 3 successive *phases*, identified by 3 colours: red, green, and blue.
- Finally, there are two types of *operators*:
 - to switch from one *phase* to the other in each reference *space* C or K,
 - but also "between" them: by crossing the border between C and K.

Issues and objectives

Bearing in mind that the authors acknowledge that this theory is being studied and that it still poses *problems of definition*, is it possible to propose a new interpretation, a new *translation of the TCK*, based on

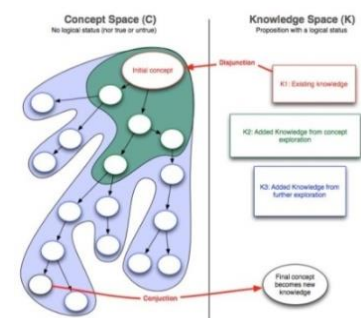


Fig. 4. Most common representation of C-K theory (free illustration from Wikipedia)

the principles of the *General System*, which would provide *additional truth* in Pareyson's sense [38]? In short, how can we "optimise" the TCK by proposing a rigorous analogy with the SG while reinforcing the "organizing principles" determined by the authors?

It is therefore not only a question of enriching this theory with external knowledge – which the SG makes possible – by linking it to other disciplines like architecture, philosophy, anthropology, etc., but also of consolidating it from a scientific point of view by associating it with the "formal framework" of the SG.

Method

The strategy will mainly consist of transforming the *TCK graphic model* so that it "corresponds" ("isomorphically") to the structuring of the SG, without a priori modifying the "principles" of operation of the TCK. The method will consist of establishing *analogical connections* between the two graphical models in a coherent and precise order, following five progressive stages.

These comparisons will be supported by changes in disciplinary and cultural context, based on philosophical research in particular. Initially, therefore, I shall concentrate mainly on the morphological changes to be made to the CK model, while more concrete functional aspects may be the subject of subsequent research.

Main hypothesis: C for Correlative and K for Causal

To relate and argue what Hatchuel and Weil call the *two spaces* of TCK, *Concept* and *Knowledge*, they rely mainly on mathematical models (set theory in particular). I propose a new *philosophical* reading. My central hypothesis is that it is possible to characterise the TCK better by using the two categories of thought defined by Vandermeersch, which are not *spaces* (as the authors consider) but *temporalities*, i.e., *periods*:

- the *C period*, which refers to Chinese thought and mainly mobilises *correlative reason*,
- and the *K period*, which refers to Greek thought and mobilises *causal reason* (or *Kausal* in German).

There are many other clues linking these two modes of thought, TCK and SG. Let's look at them in the next section.

Argumentation

Analogue and Catalogue

Correlative thinking and Chinese writing predispose and encourage the formation of *metaphors*. Through the *allusive mode* they introduce, they make it possible to express things *without defining them* – by relating them, by placing them "in relation to each other" [39]. Of all these allusive modes of expression, *analogy* is also a *setting in relation* that defines *relationships* rather than *terms* [40].

The Greek root "*ana*" means "from bottom to top" and is therefore associated with an upward movement, whereas "*kata*" means "from top to bottom" and is associated with a downward movement. *Analogue* is the opposite of *catalogue*. The *catalogue* describes a way of thinking that defines a tree structure of successive hierarchies and analytical divisions; however, the *analogue* (and, more broadly, *metaphors*) is more of an incipient and free, "budding" way of thinking.

These remarks are all the more important because, as we have already seen with J.A. Lavier, in Traditional Chinese Medicine, the *yang* zone of *wuxing* is *anabolic* and the *yin* zone is *catabolic*. This already allows us to hypothesize an initial graphic modification of the C-K diagram (which in no way alters the authors' intention and, on the contrary, considerably strengthens its coherence): the movement in C – "the *budding of non-decidable concepts*" – can only unfold *analogously* in an upward direction, whereas the movement in K is intrinsically a downward movement. A horizontal axis of symmetry enables the diagram to be inverted upwards and downwards.

For each change in the graphical representation of the CK diagram (for each of the 5 paragraphs in this third part), the first figure presented (with a small scale on the left) will show the initial state, and the diagram of the "after change" state will be enlarged on the right (Fig.5).

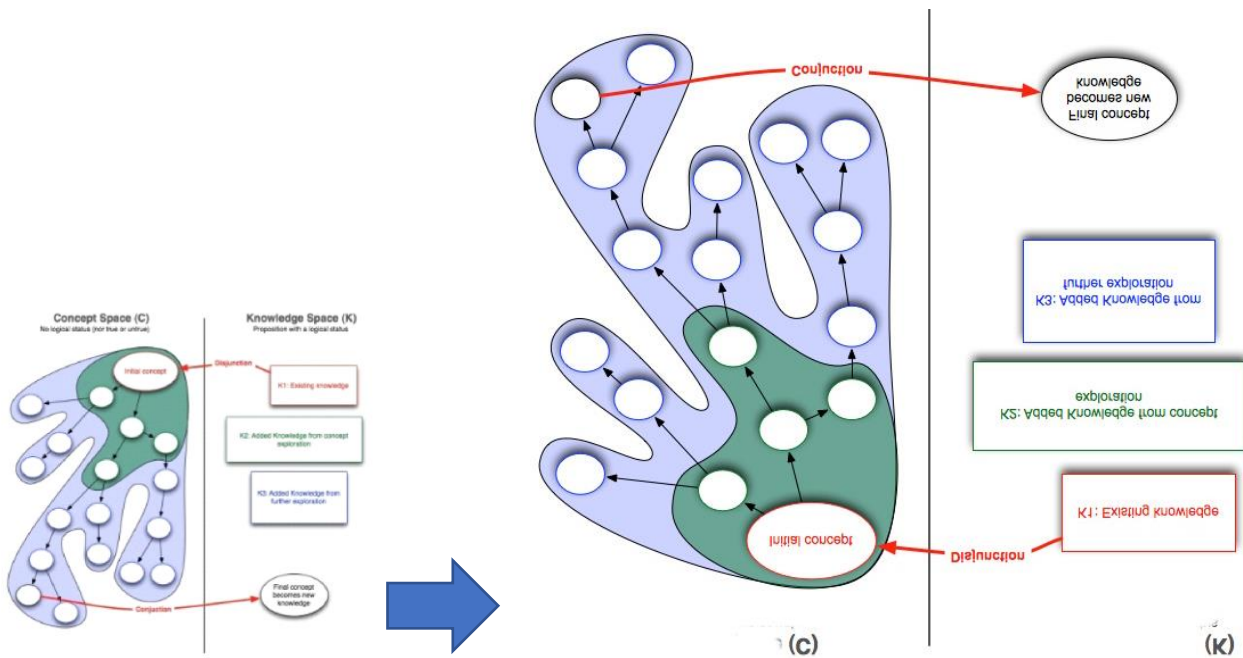


Fig. 5. The meaning of "ana", "upwards" in the analogue C period (left), and "cata", "downwards", in the K period of the catalogue (right), suggests an initial "top-bottom" inversion of the CK diagram

Symbolic and graphical expressions of the two periods, C and K

From a graphic point of view, the rectangular frames drawn within the K period (on the right-hand side of Hatchuel & Weil's diagram) do indeed represent the different logical chains of a catalogue. On the left, on the other hand, while the idea of budding (and its illustration using a schematization of the *ficus vesicularis* algae) is coherent, the tree-like relationship between the forms is questionable.

For period C, I propose using different representations that refer to the work of two authors: the English anthropologist T. Ingold and the French philosopher G. Deleuze. For this period C, we can envisage another way of "approaching things": simply by representing "the links that construct them" [41].

Tim Ingold often contrasts two ways of thinking:

- the one that defines a concept by surrounding a given place,
- and the one that evokes the object through a series of connections represented by lines that form a knot (without grabbing the object, as Hatchuel & Weil point out in their book) [42] (the same concern to build a science of relationships can also be found in M. Serres [1]).

In a substantially different way, Gilles Deleuze contrasts the "arborescent system", metaphorically assimilated to the major mode of science (which we will associate with the K period), with the image of the rhizome (which we will associate with the C period), which implies no logic, no predefined direction – and which Deleuze envisages as the minor mode of science: "Whereas the tree is made to last, the rhizome manifests "creative functions, non-conforming uses [...] which proceed by intersections, crossings, meeting points in the middle" [43].

In my opinion, node of relations and rhizome are two references that also characterize period C, which could moreover be called in the same way the "period of Correspondences", by relying on the latest T. Ingold's research [44] (Fig.6).

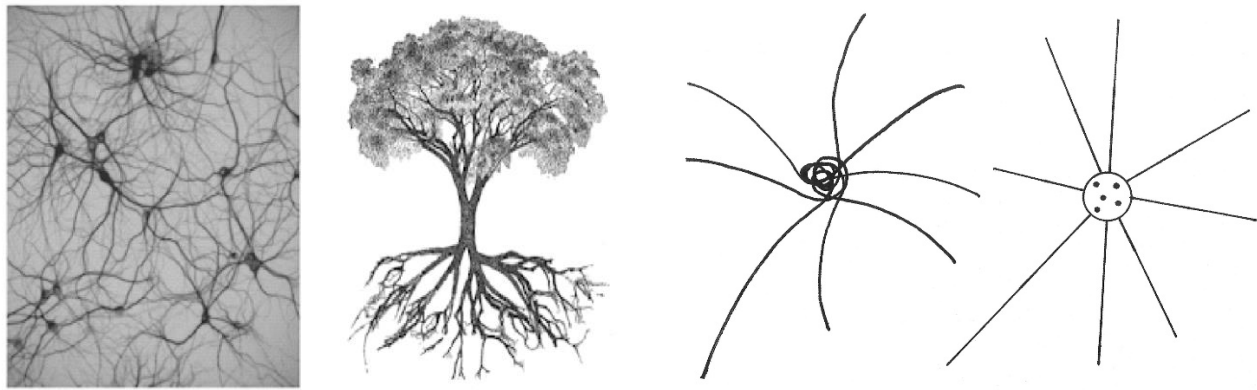


Fig. 6. On the left, the rhizome system versus the tree system, according to G. Deleuze¹. On the right, intersecting lines forming a node of relationships (left), as opposed to a space surrounded and closed by a boundary (right), according to T. Ingold (Illustrations Wikipedia)

So, in the CK diagram in the Period C (Fig.7), I propose to establish new connections in all directions.

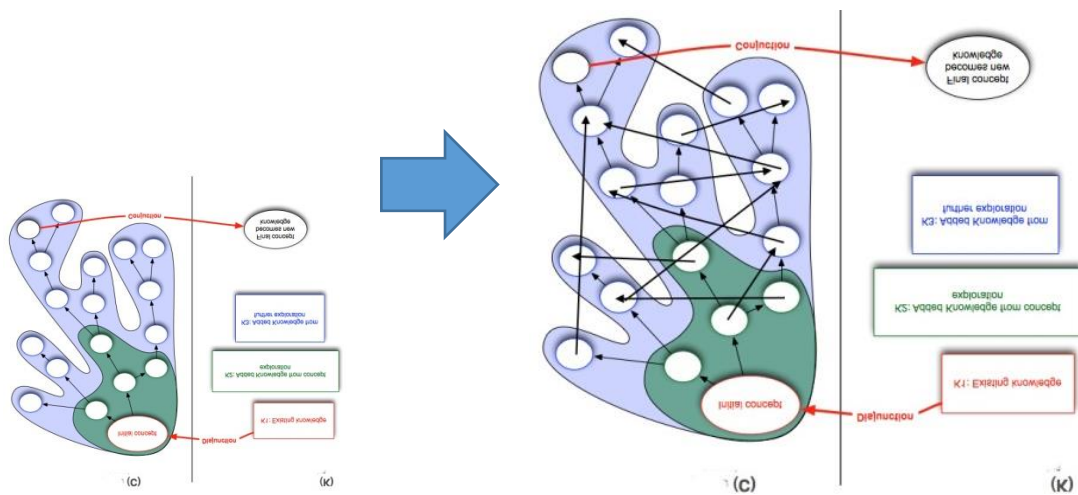


Fig. 7. Period C (on the left of the final diagram) is built by establishing connections in all directions, without following a priori the diagram of a global tree structure (unlike period K on the right)

Cyclic time

From the point of view of representation, to be consistent with a *unified theory* of design and to correspond to the *General System*, it is imperative that the design activity can continue over time and that the cycle is repeated. It is therefore essential to represent **cyclical time** [45], which allows the successive loops to renew during design operations.

We therefore need to add arrows in the direction of rotation of the cycle – i.e., "down" in period K. This direction of progression of the cyclical process corresponds well metaphorically to the direction of rotation of the sun and the perceptions associated with it. The *ascent* to the left and upwards (to the East) is associated with spring, the emergence of ideas, openness, and discovery. Then comes the afternoon and

¹ Collective, New cartography: from trees to rhizomes? Transit-City, August 2015.
<http://transit-city.blogspot.com/2015/08/nouvelle-cartographie-de-larbre-aux.html>

evening (to the West and downwards), when thought begins to take stock, to recapitulate... Finally, there is fading into oblivion when the project is completed [46]. The activity can then begin a new cycle, with new ideas and new *undecidable correlations*.

The addition of arrows in period K completes the cycle and also the hierarchical process for developing the data in the *catalogue*. Once again, these graphical modifications do not betray the authors' original intentions (Fig.8).

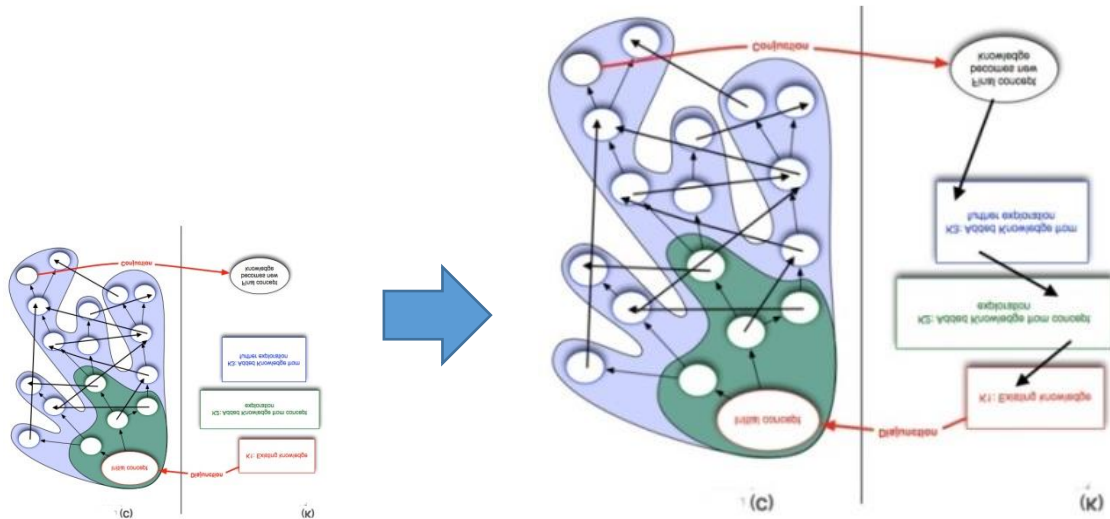


Fig. 8. "Applying cyclic time to the TCK makes it possible to establish a true correspondence with the SG"

The limit between the two periods, C and K, and the two "passages"

In Hatchuel & Weil's model, there is a vertical *boundary* – deliberately marked – between the two *periods* of each regime of thought. To be consistent with the SG (i.e., with the temporal representation of *wuxing* defined above), I propose to rotate the CK diagram 45° to the right (which, again, does not change the operating principles of the TCK).

Thus *inclined* and *oriented*, following the principles of traditional Chinese space, this boundary of the TCK can correspond analogously to the *activating centre of the SG*: i.e., to the "motor" inside the system that relaunches the movement at each *apogee* [25]. I won't go into the particular nature of the "motor" in the case of this *design theory*; that will be the subject of another article. But as in the case of the *wuxing* and the SG, this lateral inclination makes it possible to restore coherence to the CK diagram by locating in particular *the completion of the project* at the bottom of the diagram, in the North (the place of completion and also of oblivion), and the birth of *new research* in the East.

Between the South and West phases of the diagram, there is a first *important passage* that takes place in the *central period*. In a way, this *central period* "presides over" *the crossing of the activating centre*, and enables us to move from an *undecidable concept* in Zone C to a *now-known knowledge* in Zone K.

J.P. Guilford [47] had already paid particular attention to this passage and its "opposite". He recognised them as the two characteristic, "decisive", "breaks" in the design process:

- the *conjunction* in the top right-hand corner indicates when a *solution* has been identified,
- and the *disjunction* at the bottom left (North-East), where the search for a "new", as yet unknown, solution begins again... (Fig.9).

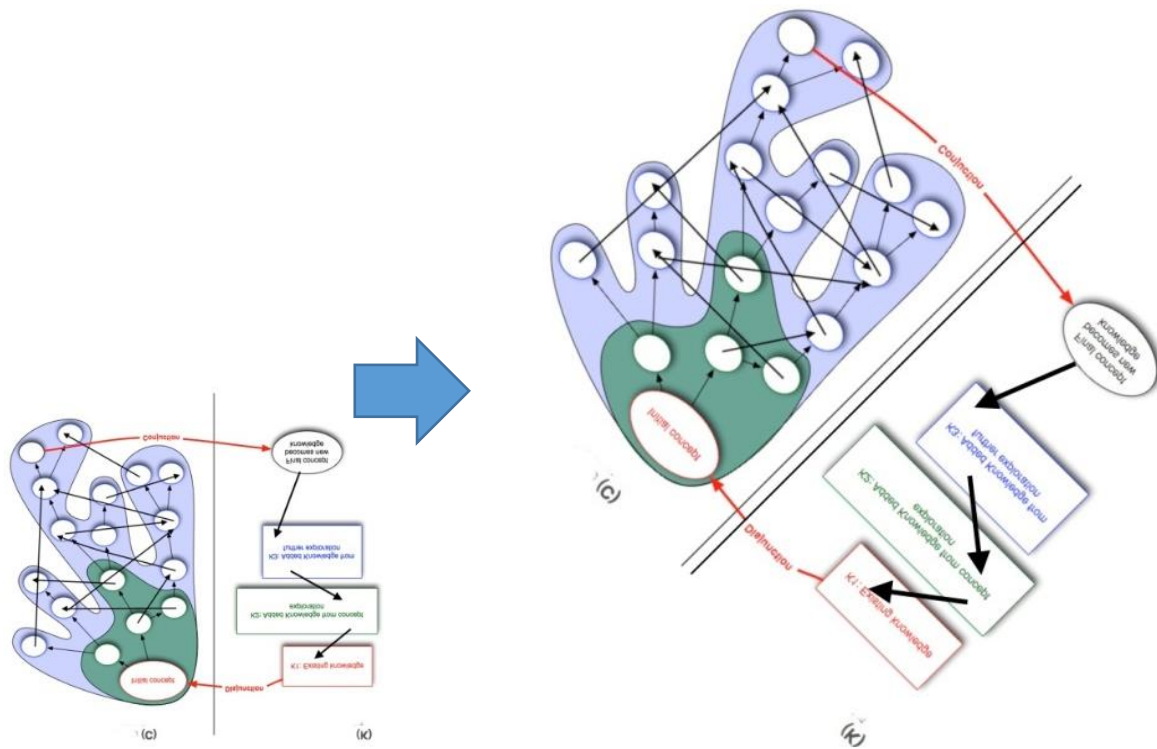


Fig. 9. The 45° border makes it possible to identify the two remarkable passages of the TCK, conjunction and disjunction, between the two dual periods of design activity. Thus, the last rectangle at the bottom of the K period is well associated with the North East in the spatial correspondence of the wuxing and with "oblivion"

The fifth element

In this entire process, we need to take a closer look at the *transition* from the "conjunction" operator at the top right: how does this transformation operate, from **undecidable concept** to that of **decidable knowledge**?

If in the "disjunction" passage of the *border* at the bottom left, the object under consideration changes its nature completely a priori because a new loop in the research process corresponds to a new idea, in the "conjunction" passage, it is the same object of knowledge that suddenly passes from one *period* to the other. In the eyes of the designer, following a simple "awareness", it changes status and suddenly adopts the status of a *solution*.

So, by simply "crossing the border", the same *central object* is *separate* and can be considered to have two dual representations, one belonging to the *Research period* and one belonging to the *Development period*. Similarly, it is more accurate to represent the border as a double line with an *empty interval*. As with the "research idea/solution idea" object, one of the lines of this *boundary* belongs to zone C and the other to zone K: the *central zone*, which belongs to neither of the two *periods*, "has no being" – what F. Jullien calls "the *in-between*" [48].

To express this *duality of the central object* graphically, I propose that this "undecidable, round" concept becomes transformed into a "decidable square" on the right and is therefore represented by the first blue rectangle. In the end, we can consider that there are 3 remarkable stages (*phases*) in each of the two *periods*, with the 3 colours: red-green-blue / then blue-green-red for each of them. With the graphic transformation that I propose, there will indeed be, as one could suppose, **5 phases in total in the TCK**, following the principle of the general system and the wuxing, **with a double central phase** (Fig.10).

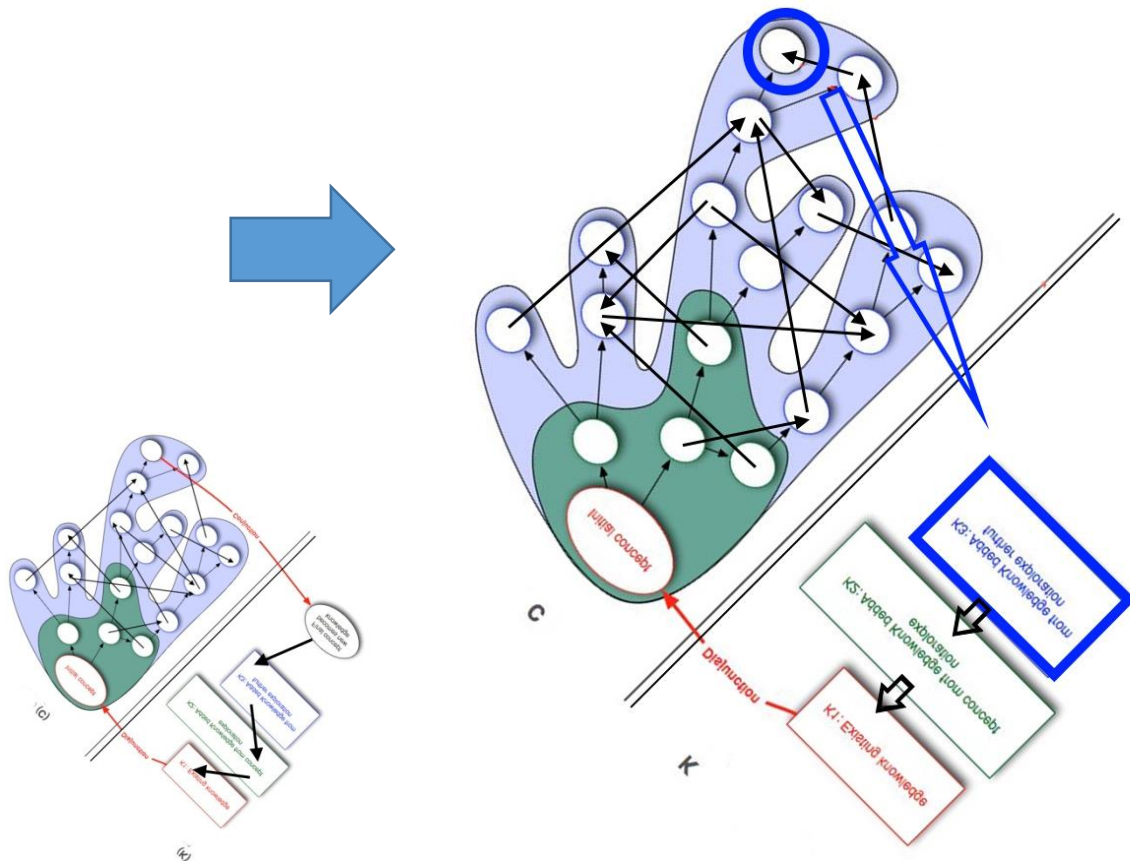


Fig. 10. The fifth element of CK Theory: the "possible idea" which becomes the "solution to be developed"

Discussion and Conclusions

Results and limitations of this research

Finally, as we have seen, few adaptations are necessary for the TCK graphic model to correspond to the SG temporal model and for the two modes of thought, Greek and Chinese, to be articulated in the same scheme.

For Hatchuel, the main difficulty with TCK lies in *defining* the set *C* [34]. But some of the terms he uses to suggest it qualitatively clearly refer to the vocabulary of Chinese thought: *allusive*, *ambiguous*, *processive*... F. Jullien often contrasts the mode of thought of *effectiveness*, "applying a model with a view to an end" (which he also refers to as the *logic of modelling*), with the mode of *efficiency*, i.e., "exploiting the potential of the situation" [49]. This major opposition established by F. Jullien between the Chinese "science of adequacy" [50] and the Greek "science of modelling" also seems to correspond to the antagonism formed by the C/K pair. This new philosophical reference reinforces the hypothesis developed in this article.

On the other hand, if we wanted to establish an analogy between the transformation that I propose for the CK theory and the theory itself, we could consider that *the argumentation* developed in the previous section (the TCK/SG rapprochement in 5 steps) is first located in zone C. Then, the coherence of the proposed correspondence – the effectiveness of the argumentation, so to speak! – should allow us to *move on* to zone K. But, it would then be necessary to check in this zone if all the thought processes described by the authors (in the various articles they have published) are "compatible" with the latest modified graph...

There are also other aspects to check or develop:

- the operation of the SG *spatial operator* transposed into CK Theory,
- and the exact role of the *activator centre* and how to implement all these tools in the specific case of operational research?

New perspectives on teaching architectural design

This different *reading* of the CK Theory opens up new perspectives, both for design theory and for "project-based pedagogy" (which is often lacking in French schools). Generally speaking, we can already put forward the idea that frequenting places of creation, exhibitions, and art, or reading texts that help establish evasive thinking as poetry, are fertile sources of inspiration for designers...

More concretely, regarding the teaching of architectural design in schools, I see two questions that deserve further exploration. The first concerns *the start-up phase*. At the start of a project, should we begin with endless analyses (in *zone K*) or rather with a search for analogies and metaphors (in *zone C*) – as J.P. Chupin seems to suggest, for example [51]? To complete this theory, it would also be necessary to examine precisely the *qualities of the four main phases* in the deployment of the SG for clarifying their specific roles in relation to each other and to the *central period*...

More generally, could we not consider this *C-K theory* as a *general theory of epistemological speeds* (as an engine *speed*), in the sense employed by G. Bachelard, who opposed and systematically separated these two fields of knowledge, *phenomenology* from *epistemology* [52]? To resolve the problem of this *separation*, Mr. Serres (his disciple?) has been a lifelong militant in establishing *passages* between literary and scientific disciplines. He even invented the notion of *pantopie* [53]. Isn't *CK Theory* the *bridge* which allows us to bring together these two philosophical points of view?

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Serge Monnot, Doctor of Philosophy (PhD) in Architecture (France, Lyon) - Ecole Nationale Supérieure d'Architecture de Lyon, Master's in Alternative Approaches and Innovation (ALT), Senior Lecturer, Co-leader of the Dem APPI, serge.monnot@lyon.archi.fr