”Mam, Dad and the child are going to a lake where it’s raining”, Manne Lodmark.

What is it that criticism is to criticize?

– From Pessac to architecturology, a (critical) history of an object of research

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When dealing with architecture – visible phenomenon through architectural objects – we might tend to consider that any attempt to have knowledge of it must depend at the outset on observation. Architecturology, whose project to elaborate a knowledge base focused on the processes of conception, as opposed to the objects themselves once designed,[1] raises not only the problem of observing phenomena that are not observable directly (the processes of conception), but it leads also to questions concerning the nature of and the stakes involved in the observation which takes into account such a project.[2] Elsewhere, we succeeded in distinguishing two radically opposed attitudes as regards the experimental act through which all theoretical work must pass and which then associates reasoning and observation. The first attitude involves putting under the test of experience, models which are constructed theoretically without any concern for the experimental aspect, whereas the second attitude concentrates on producing concepts based on a reality that is observed.[3] The voluntarily theoretical character of architecturology – we shall come back to this later – would place it among the first approaches. Insofar as the second is concerned it elaborates propositions whose status can necessarily shift from the theoretical to the critical.

But what are we to understand by criticism? If we establish implicitly a relationship with something that is theoretical by nature must we not then differentiate architectural criticism – which relates to works – from that which, for lack of a better word, we would qualify as critical studies on questions or objects possibly relating to theoretical problems? And how can those problems be raised without entering» too much into the theoretical work? Basically, the question could be: What is it that criticism is to criticize? And such is the question which through a brief historical overview of an object of research – architecturology – we would like to, if not treat, at least examine in terms of its possible connections with the work of theoretical production itself.

1. ARCHITECTUROLOGY

With architecturology, a different law governing the principle of observation is introduced. Whenever it is no longer a question of studying objects but rather the processes of conception of objects, we are enjoined to put forward the hypothesis of architecturology as simulation[4] of the processes of conception of architecture. The reason for doing so is the impossibility of perceiving this process, whereas a building can be observed. This hypothesis of simulation is based on the theoretical model constituted by the interplay model/scale.[5] This model permits a hypothetical account of the architect's work in its multiple aspects, as opposed to an account whose starting point is the analytic breakdown of tasks or of particular phases of the design process. In the architecturological simulation of architectural design, this activity is apprehended as a totality. This leads to envisaging experimentation from the side of the model and no longer from the side of the analytic partition which, we know, runs counter to the modelling approach.[6] That being said, it is highly unlikely that in the field of architecturology the objects of study of experimentation will allow, as in the physical sciences, for subdivision into parts, segments, or sums of parts or of segments; there is also little probability that the totalities turn out to be, as in biology, living wholes, As with the living, it may be necessary to continuously regroup hypothetical totalities into a more vast entity of which they are part; but, in contrast to the living,the organic individuality of this vaster entity will be advanced, if it must be, only as a metaphor or, more radically, as a systemic totality. On the other hand, if architecturology is to expose the nature and specific details of given totalities, it will be dependent on the conceptual advances it realises and on the theoretical consolidation itself that it will have accomplished.

In addition to the problem – a basic one – on the kind of totalities likely to be studied, the distinction proposed above between analytic and model generating approaches must be evaluated in the light of another consequence concerning the hypotheses on an architecturology as simulation. Since architecturology deals with the cognitive process of architectural design – as opposed to architectural buildings, i.e. the concrete objects –, it raises the problem of the kind of reality that can thus be studied. And then, how to avoid the temptation to apply the experimentation – if experimentation there must be – to the architectural objects when architecturology, does not deal with them directly, but with their conception? The question raised here refers back to the epistemological meaning of experimentation: namely, architecturological... or architectural?

2. Architecturologie and... architecture

Let us take the example of the Frugès neighbourhood in Pessac. For many, and more particularly for the primary actors involved in the operation, the neighbourhood has experimental value. Thus Frugès gives Le Corbusier full freedom to put into practice his theories taking them to their logical conclusion. Although the word to experiment is not mentioned, the incitement to put into practice refers us back to the idea of experiment as a validation test. For the experimental character will be attributed to the resultant material object only if the latter can be realized. However, to be validated, the experiment – whether technical or architectural – presupposes not only such a realization, but also the tools and means to question and interpret it. But we see that in response to Frugès' request that Pessac be a laboratory, Le Corbusier states at the inauguration of the Quartiers Modernes Frugès that Pessac was a laboratory. The experimental idea concludes with the construction site, with the realization of the work. The laboratory exists thanks to its mere material presence.

In this relationship between theory and practical application we encounter the problem of a theoretical activity which in the field of architecture is characterized by its difficulty in constructing questions[7]. Perhaps because of such difficulty, this theoretical activity, faced with calls to use the imagination, seduction, and the unique (but from a different perspective if compared with the requirements of the scientific field, i.e. in providing the proof of the existence of a phenomenon or testing a generality), feels more at ease than those coming from the normal scientific fields.[8]

Lastly, in this disticntion between two ideas of theory, – one which questions and is questioned and the other which is elaborated as a thesis to be endorsed or tested in reality – we might find an example in Thierry Gaudin's work on the distinction between research and innovation.[9] To Gaudin research aims at producing knowledge whereas innovation aims at putting forth ideas or developments whose consequences are assesed in relation to a... market that may be technological, architectural or... in criticism.

Nevertheless the case at Pessac, as a result of transformations approaching aberration,[10] leads also to questions of a theoretical nature. But then it becomes necessary to modify the point of view of the observation[11] – can we say the epistemological meaning? From the architectural to the architecturological, the Pessac laboratory transforms itself and provides the impetus for intellectual experiments which can potentially range among the premises of an architecturology.[12] From a concrete laboratory, Pessac becomes an experiment of thought.

3. Project within knowledge and within architecture

Pessac becomes a potential phenomenon in the full meaning of the term. Although not functioning in the same way as Denis Papin's kettle, which provides through a vivid shortcut, concrete evidence of the idea of transformation in energy (from heat to mechanical), Pessac does act in that manner, allowing empiricists to carry out experiments whose theoretical premises may not be totally mastered but which are intuitively perceived and ultimately result in a major step taken toward that form of knowledge. A similar example can be found in the manner of empirical medicine which, with Claude Bernard, indicates according to G. Canguilhem,

> the tradition of an active medicine, of assistance to the ill, not satisfied to limit itself to observation, practicin in its efforts to provide treatments, experiments which are barely premeditated, hardly analytic or critical, and condensed into therapeutic prescriptions whose relative effectiveness and reliability reject any explanatory legitimacy.[13]

G. Canguilhem adds, that in one sense, «empiricism takes a first step towards the experimental method with the back turned to Hypocratic medecine «. Every single word of this last quotation is significant for the study carried out on Pessac[14] in 1967, since the latter is a first step towards architecturology and it is also a step taken with the back turned to the passive observation of architectural objects. The study on Pessac, which is no longer merely empirical but as yet not experimental, chronologically precedes the work carried out on the city of Richelieu. This is because, in the meantime, the architecturological project constituted itsef; it was founded.

The Pessac study was then followed by the study on the city of Richelieu[15] resulting in the first consideration of the central question of architecturology: how does the architect give measurements to space? Between the two studies the architecturological objective and initial hypotheses were described while the problem of measurement[16] was focused on through the question of scale. Thanks to the theoretical argument advanced in Sur l'espace architectural, we could say that from Pessac to Richelieu there is passage from factual empiricism to experimental presumption. As previoulsy stated Pessac was studied in its reality and for its reality. Richelieu was studied for its double capacity to allow an architecturological development and as an analysis of architectural objects. In Richelieu, the object of research (the question of scale) is distinguished from the subject of the research (the city of Richelieu).

Then came a theoretical work on the question of architectural integration which, with a more overtly theoretical concern, set up the city of Louvain-la-Neuve as an object of study for the testing of architecturology's theoretical hypotheses on the question of integration.[17] Only subsequently was it possible to elaborate in situ an investigation taking the form of a dialogue (shall we say experimental?) between this theoretical problem setting of integration and an architectural reality.

We have said more overtly experimental in order to qualify the this phase of the research undertaken at Louvain-la-Neuve. In fact, such a consideration was not explicitly present. But a look back at that work reveals many symptoms of an implicitly experimen-

tal ambition. Such as: A) constitution of the object of study, Louvain-la-Neuve, on the basis of a theoretical investigation of integration and of more specific cases referring to distinct hypotheses on the above mentioned development (Bar-le-Duc and Hoëdic Island for the morphological and social aspects of integration, B) confrontation between theoretical hypotheses and observation in the field; C) conclusion on the notion of system, consisting of developing three models of integration.

The essence of the new work that came out of the field work[18] presents itself in the form of two texts that face each other and are organized alike with the same subdivision of titles and sub-titles. However, one of the texts refers to the theoretical questions by the problem-setting on integration while the other text refers to one abstract reality drawn form the reality of the city of Louvain-la-Neuve, whose purpose, as an ideal situation, is intended less to serve as a reflection of a real situation than as a response to the theoretical questioning confronting it. The intention was not to demonstrate the relevance of the theoretical propositions in the field as represented by the city, but, instead, to show how these theoretical interrogations are expressed, undergo change, or extend themselves into that reality.

Thus, the work on Pessac, Richelieu, and Louvain-la-Neuve offers itself as a three-stage process moving from the empirical to the experimental. The epistemological meaning guiding the operation – the development of architecturology in this case – modifies the conditions and the principles of the latter. Taking up terms borrowed from G. Canguilhem we can say that we pass on from a «passive» observation to one that is «conquering», but conquering as regards architecturology and not architecture.

4. Representation and reality

What are we to understand by «epistemological meaning»? The explanation proposed by G. Canguilhem on the history of an experiment will help us to try to clarify this question. In spite of its relative length, it is necessary to quote it in full:

> In a lesson on muscular contraction, one will define the contraction as a change in the form of the muscle without a variation on volume, and if necessary one will establish the fact through experimentation following a technique whose illustrated diagramme is reproduced in all science textbooks: an isolated muscle, placed in a jar filled with water will contract if put under an electric current without variation in the level of the liquid. One will be happy to have established a fact. Yet it is an epistemological fact that an experimental fact thus taught has no biological meaning. That's how it is and that is that. But if we go back to the first biologist who had the idea of doing such an experiment, namely, Swammerdam (1637–1680), this meaning appears from the start. He wanted to establish, in opposition to then existing theories on muscle contraction, that in that occurrence the muscle is not increased by any substance. And at the origin of those theories which all supposed a tubular or porous structure providing a passage through which some fluid, spirit, or liquid would reach the muscle, one finds an experiment going back to Galen (131–200). It involves an experimental fact which passes unchanged through centuries of research on the neuro-muscular function: the ligature of a nerve paralyses the muscle connected to it. We are faced here with an experimental act that is both elementary and complete. All things being equal, the determinism of a conditionning factor is designated by the pressure or absence, intentionally obtained, of an artifact whose application supposes on the one hand an empirical knowledge – a rather new practice at the time of Galen – concerning the fact that the nerves, the spinal cord, and the encephalon form a single tract whose cavity attracts more attention than the wall; on the other hand, that knowledge incorporates a psychological theory, i.e. metaphysical, according to which the command of the animal's movements reside in the brain. In fact, it is the stoïc theory of the hegemonikon which draws Galen's attention to an observation that any sacrificer of animals or any surgeon can experience and which leads him to institute the experiment of using a ligature, thereby concluding that the tonic and clonic contraction is brought on by the transfer of pneuma. In short, we see our modest and simple laboratory experiment stand out in the background of lasting biological meaning because what is really involved here, under the

somewhat abstract name of «relational activity», are problems of posture and locomotion that an animal has to deal with in its daily peaceful or dangerous life, in its normal or shaken environment.[19]

So at the time when it was carried out, Swammerdam's experiment had a biological meaning, i.e. a meaning more with respect to knowledge of living matter than with respect to the living itself. The reality brought into attention by ment, but only in exceptions will that reality become an intrinsic factor for the living being itself. The experiment exists as such only as regards the questioning that establishes and organizes it. This is an essential point for the main concern of architecturology, at least to the extent that it implies never losing sight of the architecturological signification in all experimental settings, even though it may lead us away from the concrete reality of architecture.

In other words, any experimental setting which would not correspond to an architecturological questioning or to its hypotheses and which would prevent identifying questions or pertinent concepts with respect to architecturology would not bear an... architecturological meaning. Behind the apparent banality of this consideration, there emerges the necessity to find ourselves at all times within the limits of a project of knowledge as opposed to an... architectural project. Before, when we spoke about a conquering observation of higher intensity as regards architecturology and not architecture we did not give any further details. An architectural reality that is put in the spotlight will be architecturologically experimental so long as it permits widening the scope of architecturological questions on architecture, or if it permits the interrogation or validation of architecturological concepts or hypotheses.

Through the to and fro movement of this experimental dialogue the resulting architecturological meaning would then take at least two directions. The first would consist of testing, in an architecturologically idealized architectural reality, the concepts or theoretical hypotheses proposed. The second would aim at constituting architecturologically architectural observations. This means that it would extend the architecturological questioning of architecture or would reflect on an already elaborated questioning with a view to determining its possible experimental mode.

The first direction raises the problem of elaborating an architectural reality that would be architecturologically relevant; the second raises the other problem of finding and selecting experiments which would be crucial as regards the architecturological questioning.

5. A crucial experiment

For example, in the case of an architectural object such as Alvar Aalto's Nordic Bank building in Helsinki, architecturology will not direct its considerations to the architectural reality of the building itself (its details, its style, its urban setting, etc.) but rather to the process of conception. Such would be the first change of perspective, that architecturology would introduce vis-à-vis architecture.[20] Furthermore, in its appreciation of the process of conception, architecturology will not attempt to identify the process Aalto engages concerning this building. No hypothesis will be advanced or examined in order to find out how the architect was able – supposedly was able – to succeed in designing this particular building. Architecturology will have an interest in this building – and particularly this one alone from among the immensity of architectural works – because it offers the fortune[21] of being suitable to be «called upon as a possible key to a hypothesis»[22]. For architecturology finds in this building both the possibility of elaborating an architecturological experiment and a confirmation in relation to one of its theoretical hypotheses.

In this undertaking, however, the architectural reality of the building will have to become blurred and opened up to a new reality, architecturological, which constitutes also – in the case of this example – a crucial experiment for its theoretical development.

For a better understanding of the above one must articulate somewhat the gist of the architecturological proposition.[23] Focused on the question of measurement, considered as the ineluctable work through which the architect must go while involved in his design work (he gives and takes measurements) architecturology puts forth the hypothesis that architectural space (resultant) can be considered as a set of

syntagma presupposed as relevant (by the architect in the course of his work). The notion of relevance refers to the multiplicity of occurrences (successive or simultaneous)[24] which architecturology calls scale and on which an initial empirico-theoretical inventory has been established during the work devoted to the city of Richelieu.[25] Among the scales identified in that work was, inter alia, the neighbouring scale, namely, the relevance corresponding to the decision by the architect to take the neighbourhood into account in an active manner during the process of conception. This means that the measurement of the space that is being conceived is directly informed by the deliberate taking into account (in the course of the architect's work) of the neighbourhood; however, the latter does not induce a specific approach in the architect's integration of the information (formal result).

The Nordic Bank building appears, then, as a crucial link for confirming the presence of such a theoretical relevance – of such a scale – among the set of scales which can possibly intervene in the definition of the measurements of the architectural object.

The above theoretical confirmation is based on the thinking experiment which would consist of imagining an inversion, namely a commutation of the building in the same environment.

With respect to the hypothesis of the neighbouring scale, Alvar Aalto's building provides a confirmation that it is possible to theoretically advance the concrete presence of the scale. In the same context, the commutation of the building acts as a thinking experiment with important architecturological – as opposed to architectural – meaning. In addition, the architecturological impact of this experiment is confirmed by the possibility of repeating it again to with other buildings, however much in their design they are limited in relation to other scales. Thus, Pei's Hancock Building in Boston can be subjected to the same commutation as it relates to the optical scale and with the knowledge that for this building, situated in Copley Square, the architect deliberately chose a particular perspective by displaying the gable instead of the facade.

Without moving deeper into the content of architecturological work, we shall simply mention the fact that these experiments led to the notion of scaler – distinct from scale – for which the neighbouring scaler and the optical scaler provide here two illustrations.[26]

6. For a criticism… that is architectuology!

Since from the outset architecturology focuses its intentions on the problem of measurement, it is clear that it is not aiming at some kind of general theory of architecture or to access the totality of architectural reality. But at the same time, this focus forces and compels architecturology to identity the crucial questions to be examined from the perspective of the problem of measurement as well as to supervise rigourously how they evolve. Thereafter, the undertaking becomes less architectural than scientific and concerns less the status of architecturology vis-à-vis architecture[27] than the identification of those questions deemed to be crucial for the knowledge of conception – through a knowledge of the measurement – and the rigour of theoretical developments applied to the question of scale.

Architecturology's relation to architecture or to the reality of architectural objects obviously does not correspond to the same order as that of architectural criticism. In the preceding example, what is analysed by architecturology is not the (complex) reality of the architectural object (Alvar Aalto's Nordic Bank building) but rather a reality which has been transformed by the theoretical hypothesis so that a dialogue can be established with it. And what is involved is indeed a dialogue with an architectural reality, even if that reality is transformed; here, the Aristotelian, Cartesian and then Contean attitude of respect and neutrality to which the theory of architecture has adhered is replaced by a practice which «manipulates», «stages» reality not for the enjoyment of architecture but for a «maximal proximity in respect of a theoretical description»[28].

The constitution of another architectural reality by architecturology can, of course, create problems of comprehension for architects legitimately concerned with a more immediate understanding of reality, or for critics of architecture whose mission, according to Barthes, is to produce meaning and to propose – at their own risk – comprehensive truths of the work[29].

To conclude, we shall refer to another type of criti-

cism. Namely, the criticism which primarily, under the aegis of history, admits as a category of objects of study, no longer the works but also the questions, methods, approaches, techniques, and even concepts. In parallel to the theoretical work in the production of knowledge, its purpose would be to show how such knowledge can be given concrete form. In the scientific field, these critical studies are classified among what is customarily called the history of sciences – reengaged in the project for a «stylistics» of a Granger[30] –. From the moment that its contents are connected to the axiological activity of science itself. Can we imagine that one of the effects of architectural research over and beyond the criticism of works or the history of doctrines might be to generate critical studies? Even if, as indicated by G. Canguilhem once again, «it is easier to be ironic on the importance attributed to concepts than it is to understand why, without them, there is no science»[31], we must hope that the scientific production of architectural research will adhere to the critical perpective proposed above and to the production of knowledge itself. Moreover, that may have already taken place without our having been fully aware of the development, in which case the remaining question would be limited to establishing the individual boundaries of that which is of a scientific, epistemological, or an historical order.

Notes

1. "The constructed building is the representation of a project which preceded it» served as one of the initial working hypotheses in the formalisation of architecturological work in 1975. Cf. P. Boudon et al., Architecture et architecturologie, tome III, Paris, A.R.F.A., 1975.
2. Cf. P. Deshayes, «La ville sans qualités», Annales de la Recherche urbaine, No32, Paris, 1986.
3. P. Deshayes, «Modèles a priori et modèles a posteriori du travail de l'architecte». LA RECHERCHE ARCHITECTURALE, UN BILAN INTERNATIONAL, Ed. Parentheses, Marseille, 1986. Reference is made there to experimental concepts, for the first case, and to experimental models for the second.
4. Cf. P. Boudon/P. Deshayes, Etude architecturologique sur la manière de bien bâtir par P. Le Muet, Paris, A.R.E.A., 1984.
5. Cf. P. Boudon, Architecture et architecturologie, op. cit., tome II, and P. Boudon, «Le couple modèle/échelle comme système de l'architecture», A.F.C.E.T., College de systémique, Paris, 1983.
6. Cf.G. Canguilhem, Etudes d'histoire et de philosophie des sciences, Paris, Vrin, 1975, who points out with respect to biology that, classically, «experimentation is analytic and proceeds through a discriminatory variation of the decisive conditions, all things being considered as equal otherwise. The models method permits the comparison of totalities which cannot be subdivided». Cf. also J-L Le Moigne, La théorie du systéme général Paris, P.U.F., 1984, chpt 1.
7. Cf. P. Deshayes, «Artchitecture et théorie», Cahiers de la recherche architecturale, No13, Paris, 1983.
8. Cf. G. Calghilhem, op. cit., p.213.
9. T. Gaudin, L'écoute des silences, Paris, 10/18, pp.22 and 126.
10. We are referring here, obviously, to transformations introduced by the residents.
11. Cf. P. Boudon, «De Pessac à l'architecturologie», Artibus et Historiae, No3 (II), 1983.
12. P. Deshayes, «Du social au-delà du sociologique?», in Pessac (II) Le Corbusier, complementary notes to the second edition of P. Boudon's Pessac de Le Corbusier, Dunod, Paris, 1986.
13. G. Canguilhem, op. cit., p.133.
14. Pessac de Le Corbusier, op. cit., 1971.
15. P. Boudon, La ville de Richelieu, Paris, A.R.E.A., 1972, published in 1978 under the title Richelieu ville nouvelle, Dunod.
16. P. Boudon, Sur l'espace architectural. Dunod, Paris, 1971.
17. P. Boudon/O. Cabat/S. Ragueneau, Intégration et architecture, Paris, A.R.E.A., 1976.
18. P. Boudon/P. Deshayes/C. Nédelec, Intégrations et architecture, Paris, A.R.E.A., 1978.
19. G. Canguilhem, La connaissance de la vie, Paris, Vrin, 1971, p. 18.
20. Cf P. Deshayes, «Déplacements», in Colloque l'architecture en questions, Collège international de philosophie/C.C.I./B.R.A., Paris, 1984.
21. We take up a term used by I. Prigogine and I. Stengers concerning scientists who «having encountered the "good question", are rewarded with the good fortune of seeing the dispersed pieces come together», in La nouvelle alliance, N.R.F Paris, 1979, p. 12.
22. La nouvelle alliance, op. cit., p. 11.
23. For a more thorough introduction to the theoretical content of architecturology, Cf. Architecture et architecturologie, op. cit tomes I to III, A.R.E.A., Paris, 1975 and tome(vol.) IV, 1983, in particular the bibliography in vol.

IV, p. 127.

24. On the specific point of simultaneous or successive occurrences. Cf., Etude architecturologique...Le Muet, op. cit. and other articles by P. Boudon/P. Deshayes/F. Pousin and F. Schcatz in La question de l'échelle, P.U.F.
25. Richelieu ville nouvelle, op. cit.
26. P. Boudon, Introduction à l'architecturologie. Paris. Dunod, 1992.
27. An impression given by a number of «critical» analyses on architecturology working from an architectural as opposed to a scientific point of view, Cf., for example, C. Girard, Architecture et concepts nomades, Bruxelles, Mardage, 1986.
28. La nouvelle alliance, op. cit., p. 48.
29. Cf., R. Barthes, Critique et vérité, Paris, Le Seuil, 1966, p.55 and sq.
30. G.G. Granger, Essai d'une philosophie du style, Armand Colin 1968, ré-édition 1988.
31. Etudes d'histoire et de philosophie des sciences, op. cit., p.19.