

## Reflective knowledge and potential architecture

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### **Abstract:**

This paper outlines an epistemological approach to “architectural project” with respect to the notion of *potential architecture*. We know, for example, that Rem Koolhaas and OMA’s project for the *Parc de la Vilette* probably had as much impact on architectural education and knowledge transfers, as Bernard Tschumi’s prize-winning and built project. To explain this phenomenon in relation to the potential, and literally speaking, “virtual” nature of edification processes, we elaborate an analogy between the potential architecture of projects conceived in educational contexts, and the potential architecture of professional competition projects. A competition project clearly belongs to these activities of architectural thinking located exactly at the crossroads of discipline and profession. But there is another form of potential architecture that shares the same intermediate status, the same “in-between”. These are projects conceived in educational situations by architecture students. Yet, the understanding of these projects suffers some very recurrent contradictions in most European and North American schools. Indeed, depending on studios and professors, students are often brought to consider their projects as results (as objects), or as representations of a result (as images), and rarely as process of thought (as intellectual journeys). Architecture students often have many difficulties understanding why their projects are, for some, just weak simulations of professional activities, while for other academic disciplines, hardly more than forms of creative activities without real epistemological status: In other words, without real value in the production of knowledge. In most so-called “research universities”, Architecture is far from shining as a valid discipline of “thinking”. It is as if student’s thesis neither had a real professional, nor a real disciplinary value: a bad study sketch as it were!

Building on some of D.A. Schön’s most durable hypotheses, particularly those stating that architectural knowledge lies at the core of reflective transfers between action and cognition, we investigate a model consisting in three fundamental aims of *edification* : construction, instruction and translation. These three aims are understood as complementary reflective sources of architectural knowledge that can be analyzed, in particular, on various corpuses of architectural competition projects whether or not these projects were prize winners or constructed. Schools of architecture share the burden of responsibility in a phenomenon of growing indifference towards disciplinary research specifically devoted to the architectural project, to the advantage of an over-investment towards technological instrumentation. Students, far from the (sometimes hasty) socio-political commitments of their elders, feel at present a certain anxiety concerning, not the future of Architecture itself, but the acquisition of peripheral knowledge and know-how in order to participate, as responsible individuals, in the blooming of society. For most

of them, it is unclear whether the architectural project can be a vehicle of social changes and cultural mutations, given the contradictory messages (from professional as well as from academic circles) they are fed regarding both the pragmatic and epistemological value of their own projects.

## **Reflective knowledge and potential architecture**

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### **Architecture as discipline and as profession**

It is perhaps easy to forget that architectural thought is reflected, not at a single level of construction, but at two levels: one usually said to be *practical* – the legitimacy of which is usually recognized – and a level said to be *theoretical*. This second level appears all the more marginal as it reveals itself in a much less visible and operating way. In architecture, there are indeed two directions for action and cognition, but it is more fruitful to distinguish between the *disciplinary* and *professional* horizons while underlining that both contain a practical and a theoretical dimension [Piotrowsky and Robinson, 2001] [Chupin, 2001-a]. These horizons are often considered as foreign one to another because they refer to very different aims and temporalities. However, without looking in the margins of architectural discipline, if we consider once again the case of competition project, we shall agree that it can be considered neither as the result of an either purely theoretical activity, or an ordinary professional activity. We can say that an architectural project in competition situation is neither fundamental research nor basic service. A competition project, for example, can be a prize winner, but unimplemented. It is then within

the decision of a community – either professionals or scholars – to participate in its archiving or in its publication integrating it into a long term cultural debate. Or, on the other hand, the unchosen project can be transferred to another situation should the design team considers all or part of it relevant "to recycle". Nevertheless, this project has originated in a competition process!

A competition project clearly belongs to these activities of architectural thinking located exactly at the crossroads of discipline and profession. As Stanford Anderson pointed out, it is indispensable not to stack these two directions of architecture on top of each other, to avoid confusing the two aims [Anderson, 2001]. But there is another form of potential architecture that shares the same intermediate status, the same “in-between”. These are projects conceived in educational situations by architecture students. Yet, the understanding of these projects suffer some very recurrent contradictions in most European and North American schools. Indeed, depending on studios and professors, students are often brought to consider their projects as results (as objects), or as representations of a result (as images), and rarely as process of thought (as intellectual journeys). Architecture students often have many difficulties understanding why their projects are, for some, just weak simulations of professional activities, while for other academic disciplines, hardly more than forms of creative activities without real epistemological status: In other words, without real value in the production of knowledge. In most so-called “research universities”, Architecture is far from shining as a valid discipline of “thinking”. It is as if student’s thesis neither had a real professional, nor a real disciplinary value: a bad study sketch as it were!

### **Between building and educating, between action and cognition**

We can never emphasize enough that among all our life Projects, be they existential, technical or organizational, architectural projects have the distinguishing characteristic of combining an ambition to build and an ambition to educate. In this sense, they reflect a profound desire for “edification”. Edification has perhaps become an unusual formula – certainly an ambiguous one – for, in fact, it refers not to two but to at least three aims, most of the time perceived as contradictory rather than complementary:

1 - Edification occurs every time we try to give shape to a major project. What we generally call design (*conception du projet* in French) refers in general to the sum of intentional steps stemming from first sketches toward contractual negotiations and up to the final built result. In this sense, edification is a fairly long maturing process, partaking of multiple interactions.

2 - Edification also exists when we try to contribute to the development of intellectual and manual abilities of an individual or a group of persons. This occurs by educating through a process of design and a production of a specific work ; contrasting product and process. Project corresponding here to an educational process summoning the individual’s potential and motivations) [Boutinet,1990].

In the first case, edification refers to the intention of building. In the second case, it is the intention to educate (or even to instruct) that is mainly summoned. This first distinction, as clear as it seems, nonetheless is an unsatisfactory one. The bonds between building and educating are closer than it would appear in the oppositions between, for example, the builder and the educator, between the professional and the professor. Things are not as clear-cut. If necessary, we need to refer to Latin etymology in order to notice that whereas *instruere* and *construere* both mean “to build”, *instructio* means... “to construct”! Edification becomes a complex notion when we recognize the existence of an intermediate relation, of a third level of motivation, one which refers to the necessary unity of any project:

3 - We shall refer to “project edification” to denote this sometimes unacknowledged intention, this urge – lying at the very heart of architectural design – this impulse to reach a coherent and almost organic whole [Hersey, 1999]. In his *De Re Aedificatoria* Alberti went as far as calling this impulse a *libido aedificandi*. Edification here means “making hold together unstable or heterogeneous parts into a formation” (in the same way as we speak of musical formation, battle formation, geological formation or even research formation). In this third sense, speaking of an intention to build, or a sole intention to educate, is not fully adequate for both are necessary mobilized at the same time. We shall then speak of an “intention to edify”. In the Latin *aedificare*, referring to the constitution of a house by its prefix *aedes*, means at the same time building, bringing up something considerable; as well as educating, bringing to virtue by examples or by words.

Let us come back to our analogy between the potential architecture of professional competition projects and the potential architecture of projects conceived in educational contexts. If it corresponds, on the one hand, to a series of acts and ways of educating aiming at designing a project in order to build, and, on the other hand, if it relates to a series of acts and ways of thinking aiming at designing a project in order to educate: can not we say than these acts and ways of thinking are properly speaking analogous? Indeed, the initial difficulty of the architectural project edification lies in an ambition to concentrate and “converge” a knowledge of objects to be built and a knowledge of beings to be educated [Chupin, 2001-b]. In order to go beyond some contemporary disjunctions which reduce projects designed in educational situations to "immature" (or even irresponsible) simulations of professional projects, and analogous disjunctions which reduce competition projects to "failed" or worse “aborted” propositions, we must first make a clear distinction between disciplinary and professional aims of architecture – even if an in-between situation is to be acknowledged later. How are we to consider the type of knowledge carried out in students’ projects (i.e. their potential architecture), along with the potential architecture of competition projects? In a literal sense, how can we acknowledge their "virtual edification"?

### **The virtual architecture of competition projects**

Let us consider, for example, the amount of competitions organized in Canada between the beginning of the 1980s (Edmonton City Hall competition, Mississauga City Hall and Civic public garden competition, Calgary Municipal Building competition) and the year 2000 (Competition for the Grande Bibliothèque du Québec in Montreal). This period is not an innocent choice for it allows us to relate, on the one hand, a progressive practice of public competitions in Canada and, on the other hand, an intensified phenomenon of "reflective practices" (in the meaning coined by D.A. Schön [see 1983 and 1987]). Indeed, Schön’s own studies on the epistemology of professional activities have largely contributed to the recognition of the reflective paradigm in architecture; design processes being inadequately represented through the sole model of technical rationality [Schön,1984]. Architectural design is a complex process of breaks, returns and reorientations, which is closer to a cyclical process of iteration than to a rational (or even less linear) process of problem solving [Rowe,1982 and 1987]. Be it external or internal criticism and judgment, be it inter-disciplinary advice or expertise, collaborative design, or cultural mediation, for example, reflective practices have become an essential part of most architectural projects that summon various levels of collaboration. In professional situations, the designer rarely works alone and the sharing of spatial models, technical data and cultural references usually comes along with a sharing of interdisciplinary knowledge. This knowledge is sometimes explicit, but most of the time, implicit (*knowledge in action*). Today, cases of remote

collaboration increase proportionally to the development of communication technologies, even when architectural projects call for the gathering of teams located in the same city. This phenomenon extends, in its turn, the demand for reflective strategies.

The history of architecture is rich of practices based on conscious methods of distancing, questioning and exploration regarding the disciplinary and cultural standards which tend to govern the production of the built environment. However, this phenomenon has witnessed particularly rich developments in the last quarter of the twentieth century, a period characterized at the same time by an intense critical activity and by an outbreak of architecture competitions [Bilodeau,1997]. Contemporary strategies appear to be "reflected", in particular, through the use of specialized publications, films, exhibitions and other multiple forms of mediations. But, in such a view, it is clear that, for example, the progressive establishment of public architecture competitions in Canada from the beginning of the 1980s, constitutes an important phenomenon that has not yet been studied rigorously. Yet the corpus for scientific studies is rich and comprehensive. Between the competition for *Mississauga City Hall* (won by Jones and Kirkland, Toronto architects and prize-winners among 246 participants from all Canadian provinces) and that of the *Grande Bibliothèque du Québec* (won by the Patkau firm, with architects Croft-Pelletier and Gilles Guité), not less than fifty competitions gave place to more than 250 projects of buildings and public organizations, and this, without considering idea competitions organized by specialized journals or by the Canadian Center for Architecture. For these two major symbolic buildings, *National Gallery of Canada* and the *National Museum of Man*, both built after 1982 by the Canada Museums Construction Corporation, not less than 12 Canadian teams (5 for the first building and 7 for the second) were appointed to design projects.

From 1975, we also note a specifically strong intensification of critical practices in the province of Quebec. Architect Melvin Charney's *Corridart* installation, conceived in 1976 as a protest against the gradual destruction of Montreal historic urban fabric, constitutes a striking example, if not a founding event, in the emergence of a new reflective paradigm in contemporary architecture in Quebec. Since, the works of Pierre Thibault, of Atelier Big City, of In Situ, of Bosses Design, of Schème inc., or the archetypal reflections on city and culture of the built production by architect Jacques Rousseau, amongst many others, have been clearly acknowledged [ Adamczyk, 1994]. But in Quebec, as everywhere else, the "reflective turn" does not appear only through marginal practices as is attested by the "critical regionalism" wave identified both by Alexander Tzonis and Kenneth Frampton. We now witness a gradual displacement of reflective activities from alternative exploration to regular professional practice, as it is in many other fields [ Schön, 1991]..

Are architects sufficiently aware of this phenomenon that goes beyond the case of architectural competition? Are we reflective enough on our own reflective practices? Such a paradox has already been pointed out by Schön himself.

*The process of reflection-in-action, Schön writes, - and especially, the particular version of it that I call reflective conversation with the materials of the situation - is an essential part of the artistry with which some practitioners sometimes cope with uncertainty, uniqueness, and value-conflict in all domains of professional practice. But architecture with its special tradition of practice and education, is one of the few occupations in which the process is manifest, honored, and maintained. Even there, I think, the process is still largely implicit. Architects appear to reflect very little on their own practice of reflection-in-action. Yet their practice, redescribed through reflection, might serve as a powerful exemplar for other professions.* [Schön, 1984].

Indeed, such a phenomenon, defined by French philosopher Michel Serres as a "métissage", an interbreeding of knowledge, is still very poorly known in the field of

architecture. It nevertheless coincides with a transformation of cultural and technological conditions of constitutive cognitive practices of architectural thinking in which analogical thinking plays a crucial role [Chupin,2000]. The networking of teams and the computerization of design mediums intensify and diversify the sharing of decision-making and knowledge transfers. Although architectural competitions have already been recognized by some architecture historians as propitious situations for professional research and experimentation [Jong,1994; Lipstadt,1989 and 1991], a lot of work still needs to be done for a full grasp of the phenomenon. In our research we go as far as to formulate the hypothesis that competition procedures contribute, as a whole, to the building of a public space of exploration and debate on the values and orientations of a society and, in this sense, it contributes to an intensification of practices allowing social inquiry and cultural mediation at the very core of projects of architecture.

However, is it not paradoxical that explorations and transfers of knowledge seem to be more active in professional contexts than in academic contexts where architectural project should be at the leading edge of cultural and intellectual transformations? This paradox may be explained by the surprising reluctance of architecture scholars regarding the study of local transformations in contemporary practice of architecture. As a matter of fact, a great number of studies already deal with building conservation (either of traditional and modern heritages), while other studies focus on the reconstruction of monographic and biographic trajectories of these works: We must nonetheless recognize that little research specifically studies contemporary strategies of design and reflective practices in architecture, all the more in specific cultural contexts. This void can partly be explained by an over-investment of financing – and thus of efforts – dedicated to the adjusting of computer-aided design systems, to the paradoxical detriment of research studies on the most fundamental cognitive and disciplinary aspects. [Chupin,2000 and 2001-a]

### **Edification and translation**

During the last edition of "Entretiens du Centre Jacques-Cartier" - an international and trans-disciplinary symposium we organized in Lyon in December 2001 – we were given the opportunity to formulate some of the most lively questions regarding contemporary edification. Entitled "Building, Educating, Translating", this scientific meeting on "mediations, transfers and knowledge in project edification" was the opportunity to assemble interlocutors originating from three groups of disciplines that increasingly resort to the notion of *project*. The disciplines are architecture, urban engineering and educational sciences (for detailed information see the *CIT 2001* web site at <http://www.lyon.archi.fr/CIT2001>). This international meeting was aimed at evaluating the paradigmatic potential of architectural project edification for an understanding of various other forms of projects. As a matter of fact, at the crossroads between cognitive and cultural perspectives, architecture reveals itself as swayed by the double ambition of building and educating (a duality which, as we stressed earlier, is at the heart of the etymologic root *aedificare*). Confronted with operations of transfer where knowledge is not only displaced but most of the time transformed – or, better even, "translated" – we were interested in investigating in particular a twofold phenomena of alteration : alteration of knowledge and alteration of efficiency.

In all three disciplinary fields researchers and professionals acknowledged that knowledge-transfer divides up according to at least three essential vectors in any true project, each of these vectors carrying its own problematic : the operational vector, the educational vector and the trans-disciplinary vector.

1 - the operational vector: (building)

The constructive practice of project can be addressed as the application of knowledge, expertise and assimilated skills. However, considering that a project may be the opportunity for a production of knowledge, how is this knowledge built in a project?

2 - the educational vector: (educating)

The educational practice of project may be examined from the point of view of learning (or self-learning) and, in particular, as a process of assimilation of necessary skills for a collective participation to a project. In what way is a project a reversible space for a sharing of these skills: what do we teach and learn in a situation of project design?

3 - the trans-disciplinary vector: (translating)

Finally, it seems necessary to confront these two dimensions and the figure of architectural project as a paradigmatic form of *action / cognition* in contemporary edification. In which conditions does a project reveals itself as a decisive phenomenon in the transfer of knowledge: what do we translate in a project?

Yet, the verbal overbid around the notion of project – particularly in French and Italian contexts - sometimes masks a real absence of project, including in architecture. Some projects are very little constructive and some other are even less instructive. On the other hand, there are educational projects, or projects of engineering, in which these two dimensions are not underlined enough, whereas numerous educational projects appear most of the time obviously too "edifying". It is certainly not within the limits of this paper, that we can report what about twenty European and North American speakers handled in this symposium. We shall only hint at what Canadian architects Claude Provencher and Éric Gauthier discussed in particular with professors Bernard Rey and Jacques Tardif, and we shall end mentioning some element of a synthesis given by professor Philippe Meirieu, main adviser of former French Minister of Education, Claude Allègre.

Among the most revealing moments of this symposium, there was an argument between practicing architects and scholars in education sciences over edification as building and edification as educating. During a presentation on the new wave of " fast track " in architectural project, Montreal architect Claude Provencher questioned some of the most immediate consequences of the management trend on the fundamental nature of architectural project. For Claude Provencher, temporal and economical constraints created accelerated methods for the production of architectural project which have a direct impact on the methods of design and building, and consequently, on the result itself. Recognizing that projects conceived and executed according to these organizational criteria actually compress time schedules, he also admits that this procedure raises a great wave of controversies on behalf of professionals and even on behalf of judicial authorities. This tendency for fast track, demands in return new educational efforts and researches to assist future architects in their attempts to counterbalance its prejudices on architectural quality. According to Claude Provencher, *fast-track* calls for new competences. [see Provencher in CIT 2001].

It is precisely on the issue of competences associated to project design and management, that professor Bernard Rey, Head of the Faculty of Education Sciences at "Université Libre de Bruxelles", insisted on the fact that a competence can not be reduced to the use or the invention of procedures. For professor Rey, "To enumerate competences to be acquired is a reminder that to enter the universe of knowledge means adopting a posture for intellectual activity: it is to put on this knowledge, to re-make choices and inferences which were of use for its construction, it is to practice procedures, it is also to raise problems and try to solve them thanks to the procedures that we know or to those that we invent... To be competent, thus means to build a situation, that is to say to cut a segment of the spatio temporal continuum and to track down to it various

characters. Now, what competence requires, in the deep sense of the term, it is a *project*, understood as an act of freedom by which we decide on what deserves to be taken into account and by which the world takes meaning and qualities. And even if making it, the person gives to this reality a meaning that others already gave prior to him or her, it is for him or her every time an act of novelty. " [see Rey in CIT 2001, see also Rey, 1998].

Project edification thus appears to be the place for a particularly complex interbreeding of knowledge, innovation and learning. There are not only various transfers of knowledge, but also various transfers of ways of learning, as explained by professor Jacques Tardif from the "Faculté de l'Éducation" at Sherbrooke University. However, according to Jacques Tardif, the degree of transferability of learning is very different whether these are realized in a formal or less formal educational environment. In fact transfers of ways of learning appear easier to seize through a study of causes explaining a difficulty, if not an impossibility, to transfer what has been learnt in school, than through still badly defined theoretical models. Considering that learners' dispositions to transfer (as well as their relationship to knowledge) seem more determining than any educational strategies, professor Jacques Tardif therefore suggests privileging the axis of competences rather than that of knowledge, whether it is in training programs or in educational program. [Tardif in CIT, 2001, see also Tardif, 1999].

In most North American contexts of architectural education, this problem of a balance between competence and knowledge is a well known issue. It requires a delicate equilibrium, the measure of which determines the "penalty" given to schools of architecture by accreditation boards. Now, among the amount of competences indispensable to become an architect, there is one which transverses all others and which is not on the accreditation list. This complex competence, which crosses throughout project design and generally speaking design thinking, we shall refer to as a competence to "translate". Éric Gauthier, another Montreal architect invited to reflect on project edification, gave a perfect illustration to this very question of translation, taking the case of the reorganization of Buckminster Fuller's masterpiece into the "Biosphere project". In fall 1991, the City of Montreal and the Canadian Ministry of the Environment launched a competition of architecture about the transformation of the United States Pavilion built for the 1967 World Fair. The new program was to fit out a center of interpretation dedicated to "water" and more particularly to the Saint Laurent river. The following extract summarizes some elements of Eric Gauthier's argument given at the colloquium in Lyon.

"The competition, said architect Éric Gauthier, presented three different and relatively new stakes which occupy an important place in the reflection that accompanies the production of contemporary architecture. First of all, it is necessary to approach the problem of what we qualify as modern patrimony today. The geodesic dome conceived by Buckminster Fuller belongs to the category of twentieth century icons... Then, it is necessary to evoke the issue of multi-disciplinarity. Here the statement of needs consisted of a brief text describing the mission of the institution in very general terms and competitors were required to constitute interdisciplinary teams of museologists, councilors scientists, architects and engineers to formulate satisfying propositions. Finally, the project also had to be exemplary on environmental issues and it had to implements means and techniques properly suited to produce what we qualify as "green architecture" today. The architectural process underlines a tension which can be generated by the desire to follow a rigorous method inspired by applied research in project design, while architectural gesture depends rather on poetic shortcut and on a rhetoric of seduction. Fuller's dome illustrates in a tragicomic way this tension between his expressed will to contribute to the survival of a world threatened by the depletion of natural resources, and his desire to create a

strong and singular work inscribed in a utopian scheme carrying to its paroxysm the simplifying mechanics of the architectural concept. " [see Gauthier in CIT 2001].

### **“Inhabiting and growing”**

Finally, as French professor Philippe Meirieu magnificently laid out in a synthesis conference given at the end of the colloquium, " we cannot rid ourselves of invention because, as for most human projects, architecture is never once and for all a grounded discipline. There is a gap between what is of the order of analysis and what is of the order of individual or collective inventiveness". For Philippe Meirieu, we cannot work on a theory of project without assuming at first the contradictory character of human activity. Resuming those three transdisciplinary axes of the Lyon colloquium (building, educating and translating), he proposed an understanding of project edification aiming, on one hand, at building acceptable human actions, potential roads; and, on the other hand, at educating while sharing founding contradictions; and, finally (referring to Michel Foucault's famous work, Surveiller et punir ), projects aiming at translating for better ways of "inhabiting and growing". [see Meirieu in CIT 2001, see also Meirieu,1995].

Since 1998, this on going research has already been a unique opportunity to exchange experiences on various technical, pedagogical or organizational projects. The relevance of such an epistemological forum increases proportionally to the development of new technologies and particularly within the implementation of " virtual universities ", "Virtual Design Studios" and in a general way in the context of new forms of collaborative practices. This originally franco-canadian research is now initiating the setting of an international, pluridisciplinary and pluriprofessionnal network devoted to the epistemological complexity of architectural edification and to the study of *potential architecture*.

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