

Chapter 6

Emerging Challenges for the Research and Innovation in Architecture

Research and innovation are two of the keywords of the contemporary debate on architectural education. We tried to record the research engagement of our schools and we are presently trying to map the innovation around Europe. It is high time to anticipate a more coherent research strategy for our schools. The improvement of our research record can be achieved only after a coherent strategy, grounded upon a set of competences for the profile of the contemporary researcher in architecture. How can we assure those competences? Through which structures of the system and of content of studies? How the collaboration between us can improve our research activities. Which kind of initiatives our Network should take in order to support the architectural research production in Europe?

Introductory Synthesis by

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Presentation of the Innovative Education Program of Grands Ateliers de l'Isle d'Abeau, France, by

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Paradoxes des Challenges de la Formation en Architecture

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Merci pour cette invitation à participer à la réflexion menée dans le réseau européen des directeurs des écoles d'architecture autour de la formation en architecture dans l'espace européen. Mais la tâche est difficile. Lors d'une première participation, il y a quelques années, à Hania, en tant que chargée de la formation et de la recherche à l'école d'architecture de Clermont-Ferrand, j'avais apprécié les débats ouverts et fructueux qui s'étaient déroulés. A la lecture des trois ouvrages qui relatent les conférences et les discussions du réseau, j'ai retrouvé cette volonté de construire un espace d'échanges dans le respect des cultures et des sensibilités de chacun, ce qui est le levain d'une coopération comme de la formation.

Je ne me risquerais pas à synthétiser les informations et les points de vue exprimés, étant donné leur large spectre. Je propose plutôt le regard transversal que ces travaux m'ont suggéré en mettant en évidence sept challenges, souvent paradoxaux, qui peuvent être dégagés dans les stratégies d'adaptation au changement présentées suite à la déclaration de Bologne.

Le challenge de la diversité et du commun

Un large consensus se dégage autour d'une posture à la fois pragmatique et

Paradoxes of the Challenges of Education in Architecture

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Thank you for this invitation to participate in this difficult reflection carried out within the European Network of Heads of Schools of Architecture about studies in architecture in the European Higher Education Area. Few years ago, I had the chance to come to Hania as a research and study coordinator of Clermont-Ferrand school of architecture and had appreciated the open and profitable debates which took place. While reading the three reports of the conferences and the discussions of the network, I found the existing will to build an exchange area while respecting different cultures and the sensitivities of each person, I would not go far and summarize the information and the expressed points of view, given their broad spectrum. Rather then, I will propose a transversal point of view that felt from these discussions by highlighting seven paradoxical challenges, which can be released in the strategies of "adaptation to the changes" presented following the Bologna process.

Challenge of the diversity and common basis

A broad consensus emerges around a pragmatic and responsible attitude to wel-

responsable pour accueillir un monde en devenir sans renoncer à l'orienter. L'importance accordée à la reconnaissance des diversités comme bien commun est un leitmotiv. Ainsi que l'expression de la volonté de préserver ces diversités tout en établissant des liens entre elles si l'on veut permettre la circulation des étudiants, des enseignants, de la connaissance. A contrario, est exprimé à plusieurs reprises, chaque année, le parti de se prévenir contre la standardisation, la normalisation, la simplification, l'enfermement dans un système clos, la réduction du nombre d'années d'études.

La formulation selon laquelle la différence serait la base commune, un bien commun précieux, est particulièrement significative de ce positionnement. Mais la diversité pourrait se transformer en une multiplicité cacophonique néfaste. Le mythe de Babel nous rappelle à quel point la construction de la maison des hommes est difficile car elle est toujours menacée d'incompréhensions mutuelles et de dispersion. En conséquence, l'organisation de la mobilité physique et mentale par un minimum de dispositifs communs lui étant favorables est identifiée. Le découpage de l'enseignement en semestres et en modules ainsi que le système de validation commun des ECTS sont largement plébiscités même si leur mise en pratique s'avère difficile. Mais s'il s'agit bien d'organiser une offre de formation qui laisse des marges de manœuvre aux étudiants dans la gestion de leur cursus, cela ne signifie pas pourtant de les laisser faire librement leur marché, ce qui accentuerait l'émiettement de la formation ainsi que la compétition sauvage, allant à l'encontre des objectifs visés.

Le challenge de l'uni et multi-versité

Deux modèles de référence sont sous-jacents aux évolutions et révolutions de l'U-

come a becoming world without giving up directing it. The importance attached to the recognition of diversities as common good is a leitmotiv. As well as the expression of the will to preserve these diversities while establishing links between them to allow the exchange of students, teachers, and knowledge. Each year, on the contrary, is expressed on several occasions, the party to avoid the standardization, the normalization, the simplification, and also the reduction of the numbers of years of studies below 5 years.

The expression: "the differences are the common base" is particularly significant of this positioning. But diversity could be transformed into a harmful harsh multiplicity. The myth of Babel recalls us to which point the construction of the house of the men is difficult because it is always threatened with mutual incomprehension and dispersion.

Consequently, the organization of physical and mental mobility by a minimum of favourable common rules is identified. The division of teaching in semesters and modules as well as the common system of validation of the European credits (ECTS) is desired even if their practical application proves to be difficult. It is about organizing an educational proposal which offers a manoeuvre room to the students in the management of their studies. However, that does not mean to let them do whatever they want, which would accentuate the break-up of the education as well as a fierce competition, which would go against the targeted aims.

Challenge of the uni and multiversity

Two models of reference influence the evolutions and revolutions of the University. On

niversité. D'une part, le modèle de la connaissance utile, de la professionnalisation, d'autre part celui de la longue et double tradition des humanités et de la science. Les débats reflètent l'oscillation entre une formation générale de portée intellectuelle et morale et une formation spécialisée. Par le terme de "multiversité", selon une des formulations de Kerr en 1963, alors président de Berkeley et leader d'une nouvelle conception de l'université américaine, il était souligné que l'université ne pouvait plus prétendre à l'unité du savoir mais qu'elle devait privilégier l'ouverture sur la cité et sur les spécialisations professionnalisantes. Dans la formation en architecture, cette tendance l'emporte sans que soit annulée l'importance des humanités, pour transmettre les trésors de la culture universelle et pour favoriser un esprit critique et une distance réflexive dans un champ de formation qui ne peut ignorer ses facettes esthétiques et éthiques.

Le challenge d'inventer des articulations entre théories et pratiques, entre écoles et mondes professionnels

Un autre fort point de convergences est celui des articulations à inventer entre des domaines qui se sont souvent repoussés. L'accumulation de savoirs ou le repli disciplinaire, pas plus que le repli sur l'atelier, ne semblent plus aller de soi. A l'ère de l'autonomie des universités, il s'agit au contraire d'élaborer de nouvelles perspectives pédagogiques en articulant le penser et le faire, le savoir et l'action, les lieux de formation et les mondes professionnels, sans confondre leurs caractéristiques propres et sans établir des relations de domination ou de soumission entre ces différents secteurs. Les débats mettent en évidence que ces articulations conduisent à dépasser le modèle d'application de la théorie à la pratique ou leur simple juxtaposition, voire leur accumulation. Cela ne signifie pas non plus une indifférenciation

one hand, the model of useful knowledge and the professionalism. On the other hand, that of the long tradition of the humanities and science. The debates reflect the oscillation between a general education of intellectual and ethic level and a specialized education. The "multiversity" according to Kerr (1963), then president of Berkeley and leader of a new vision of the American university, means that the university could not claim any more the unit of the knowledge but it should take into account the society and the professional specializations. In architectural education, this tendency carries it out, without cancelling the importance of the general culture to transmit and to support a critical spirit and a reflexive distance in a field of studies which cannot be unaware of its aesthetic and ethical facets.

Challenge to invent articulations between theories and practices, schools and professional world

Another strong point of convergences is that of the articulations to be invented between fields which often were opposed. The accumulation of knowledge or the education by studio is not sufficient. On the contrary, it is a question of elaborating new teaching scenarios, which articulate the thinking and the doing, the knowledge and the action, the places of studies and the professional world, without confusing their proper characteristics nor to establish dominant or submissive relations between these various sectors. The debates highlight that these articulations result in exceeding the model of application of the theory to the practice or their simple juxtaposition, to link theory and practice. For that, the boundaries between the disciplines, the schools of higher education and the society are to be recon-

des démarches mais plutôt des fécondations croisées. Pour cela, les frontières entre les disciplines ainsi qu'entre les écoles d'enseignement supérieur et la société sont à réenvisager afin de traiter la complexité, élargir la compréhension du monde et la compétence à le transformer. De grands chercheurs et penseurs comme Deleuze, Michel Serres, Edgar Morin, ont mis avec d'autres l'accent sur l'importance des systèmes de relais, des interceptions, des croisements pour renforcer un nouvel esprit scientifique.

Le challenge de ménager l'enseignement du projet comme interface critique

Dans le contexte de changement, voire de mutations, contribuant à une décomposition et recombinaison des métiers et professions en architecture comme des dispositifs d'enseignement, la formation par le projet constitue une spécificité rare, fragile et variée, que les formations soient plutôt académique versus professionnelle, ou plutôt artistique versus technique. Le projet constitue une ressource et une interface critique en ce que différents plans y sont impliqués, mêlant et entrelaçant l'implicite et l'explicite, les données objectives et la subjectivité, la distanciation et l'engagement, le rationnel et le sensible, les échelles problématiques et dimensionnelles (S. M. L .XL).

Le challenge de relier l'enseignement et la recherche

Le chantier des doctorats en architecture est une ressource précieuse à développer, et ce d'autant plus que toutes les écoles d'architecture ont à affronter un vaste programme, celui d'établir des agencements soutenable (sustainable) entre nature et culture, à une période de possibilités technologiques croissantes de transformations des milieux, mais également caractérisée

considered in order to treat the complexity, to widen the comprehension of the world and the competency to transform it. Famous researchers and thinkers like Deleuze, Michel Serres, Edgar Morin and many others, stressed the importance of the communication systems, the interceptions, and the links in the reinforcement of a new scientific spirit.

The challenge to take care of the teaching of the design like a critical interface for education and research

In the context of change, even of mutations contributing to the decomposition and re-composition of the professions in architecture like structures of education, the studies by design constitute a rare, a fragile and a varied specificity, if the studies are rather academic versus professional, or artistic versus technical (typology of the schools by Orbashi and Worthington). The project constitutes a resource and a critical interface in what various plans are implied mixing and connecting the implicit and the explicit, the objective data and the subjectivity, the distance and the engagement, the rational and the sensitive, the problematic and the dimensional scales (S. M. L .XL).

The challenge to connect teaching and research

The field of the doctorates in architecture has to be developed, especially as all the schools of architecture have to face a huge field which is to establish sustainable connexions between nature and culture at a moment where the increasing technological have the possibilities of transforming the ecosystem taking into consideration the fragility of mankind.

par la forte prise de conscience de la fragilité du vivant.

Le challenge de la difficile évaluation

La question de l'évaluation a été le terrain de l'expression de divergences. Elle est perçue soit comme une menace de contrôle, de sanction, de normalisation, soit comme une ressource formative précieuse puisqu'elle contribue à réguler la formation en termes d'explicitation et d'ajustements des objectifs, des méthodes, en termes de communication des résultats obtenus comme en termes de délibérations entre les différents acteurs. Cette controverse n'est pas propre à l'architecture. Elle est bien connue des chercheurs qui travaillent dans le champ de l'évaluation alors même que cette pratique qui s'est déjà largement développée dans le monde anglo-saxon s'étend et s'impose dans la construction de l'espace européen de la connaissance comme une orientation incontournable en ce qu'elle permet de rendre compte, de rendre des comptes et d'optimiser la qualité. L'évaluation remet en cause une certaine tradition de liberté académique et une certaine conception de l'enseignement qui situait l'apprentissage du côté de l'apprenant seulement et imposait comme règle de qualité de l'enseignement celle de l'adéquation des énoncés à l'état des connaissances.

Le challenge du questionnement informé

La diversité des modes d'enseignement, comme la difficulté à en identifier avec précision les contenus, désigne la difficulté des écoles à déterminer une vision du futur. Au moment où les enjeux de l'urbain, du paysage, de l'environnement, sont devenus indissociables de la chose architecturale, une voie commune nous est indiquée : la responsabilité de maintenir l'enseignement de l'architecture moins comme réponse

The challenge of the difficult evaluation

The question of the evaluation was in particular a subject of divergences. It is perceived either like a threat (control, sanction, standardization), either as an important information resource since it contributes to regulate the education in terms of explanation and adjustments of the objectives, the methods, and the communications of the results. This controversy is not specific to architecture. It is well-known to researchers who work in the field of the evaluation, while at the same time this practice is already largely developed in the Anglo-Saxon world and is imposed as an essential tool in different organisations and countries since it makes it possible to report and to optimize the quality. The evaluation is a challenge which calls into question a certain tradition of academic freedom and a certain concept of the teaching which located learning on the side of only students or of the adequation of contents with knowledge.

The Challenge of the responsibility and of being open minded

The diversity of the methods of education as well as the difficulty to identify their contents mean the difficulty to have a vision for the future at the time when the urban, the landscape, and the environment became a part of architecture. A common way is indicated to us: the responsibility to maintain the education of architecture less as an answer but as an open question

que comme questionnement ouvert autour de ce que Hannah Arendt appelle la construction d'un monde commun à hériter et à renouveler, car l'architecture comme l'humain échappent à toute définition définitive.

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Discussion

Chaired by

Constantin Spiridonidis, Thessaloniki, Greece

Hilde Heynen, Leuven, Belgium

Thank you very much for this contribution, I think it was a very good outline of the difficult challenges that arise in this respect. I just wanted to share with you the memory of a conference we had a couple of months ago in Brussels, called the Unthinkable Doctorate, at which Dr. Younes also gave a much appreciated paper, where a lot of these same issues came up, and it seems that the main underlying question there, as I remember, was the clash between traditions: on the one hand, the tradition of doing design and on the other, the tradition in the universities of doing research according to an academic system and set of expectations. Maybe one of the big differences there is what you called the difference between "implicit expectations" and "explicit expectations" in the assessment of research. These expectations tend to be very explicit, whereas in design assessment you can less easily list the kind of things that a good design should have. So we talked about this; of course we did not reach any kind of resolution – one doesn't really expect to from such conferences – but I do think that this difference in tradition and intellectual background between designer cultures and research cultures is something that we need to address. I for one am totally convinced that these differences can be bridged, or can at least be made to interact with one another in a very productive way, and that this is what we should aim at if we are – and I assume that this is the case in many countries – under pressure to do more research, to have more academically recognizable output in terms of publications (this is what I see happening in Belgium and the UK and Holland). I do think that it is worthwhile to put an effort into that direction and to try to make this interaction work on a much higher level, much better level than is the case at present.

Jean Paul Scalabre, Architects' Council of Europe (ACE)

I would like to say that I completely agree with the way Chris approached the problem, but just to have some commentary I think we must have a historical review of the end of the political utopias and the end of the architectural utopias. The modern movement was a way to have a common world among architects, and I think that we lost it more than thirty years ago. It is quite difficult to construct something when the wall of Berlin is destroyed, you know? One way of thinking together is to focus on our common heritage, our common European heritage, our common culture, and the necessity of inventing a future. It is not, as I see it, possible to invent the future if we are not conscious of the heritage that we have to share and to maintain. And there are some tools available. I can see two that are characteristic of the European culture: one is the use of reason – a non-scientific but rationalist attitude which is very different from the scientific one – and the other is the invention and development of democracy. I think that in all truth these are the only two tools available. So that is the fact. It is not the moment for new utopias, it is

the moment to make a point.

Per Olaf Fjeld, Oslo, Norway

Thank you for a very interesting construct, Dr. Younes. I would like to read your paper very carefully. There was something you said related to the challenge over mentality that I find very provocative and challenging in many different ways. You spoke of the challenge over mentality between the educator and the profession: I take that to mean that they will never meet. In other words, the profession goes on, the profession wants to go on and it has its own responsibility in doing that. Education goes on in the way that it is supposed to go on; in other words, educators have responsibilities of their own. The challenge, then, is exactly what you said: the challenge of making this leap and creating a dialogue between the two. In other words, it is not necessarily within the idea of the organization, but it is within the mentality of the way we read it, and then the instruments we are able to produce to make that reading come through. I find that very interesting.

Arza Churchman, Haifa, Israel

I want to make two comments. First, I think that we have to recognize that the tradition in research has changed. There is a new language in terms of what research is and how one conducts it and whether there is such a thing as an objective position or an objective researcher; and I think that a new approach in research makes it easier to do research in architecture, because then you do not have to twist elements of architecture into something that it does not really fit into, which is an advantage.

I want to argue as an outsider against the fact that there is a common culture in Europe. I think this is not true. There is a male culture and female culture, there is a rich culture and a poor culture and there is a Catholic and Protestant and Jewish and Moslem and whatever other culture you want, so there are certain things that are common to at least some of those groups, I guess, but I think that it is very important to recognize that this diversity exists and that you cannot deny it or pretend it is not there, just as you cannot pretend that the world is an objective world, or that it can be translated or reduced to the one simple variable that we are studying. It does not work that way. I come from the field of environmental psychology and one of the things that we emphasize is the contextual nature of everything, and that contextual nature is or should be very much part of architectural practice. And that is part of the link between architectural practice and the kinds of research that one can do now.

Dimitris Kotsakis, Thessaloniki, Greece

Those are some very interesting questions, very interesting indeed; but we cannot discuss them. It is not because we do not have the paper; it is because it is difficult. We have been trying to discuss this sort of thing for so many years now that it is very difficult to discuss it in abstract terms. We need to put it in a concrete context. If I go into all these things, like diversity and a common basis, what concrete discussion can we have on that? Your second point was what is the university? Not uni-multi-versity, but what is the university. Theory and practice, or in Greek praxis, teaching and research, evaluation. The only thing I can comment on is the last question, the question of responsibility, which

you ended by saying 'not answers, but questions' or "open questions". That was the first thing said eight years ago, the very first thing. I have a good memory.

Chris Younes, Clermont-Ferrand, France

That is why the network has such a long life.

Dimitris Kotsakis, Thessaloniki, Greece

True. But now I must remember my response to it. My response was that we cannot work with only two words – questions and answers; we need three words, and the first is the Greek word *aporia*. Maybe you are not familiar with the word. It means a desire to do something without questions and without answers. Pure desire, that's *aporia*. Then comes the question, which is a control, a bad thing, a strong thing, because it controls the desire and it directs the answer. And then we have the answer, which takes us back to the desire, but not the desire to do things, rather a desire in doing things. So my answer to your question would be: Not questions, but *aporias* and answers.

Stefano Musso, Genova, Italy

It is difficult to make any other observation about what Chris said, because the ladies that preceded me said a lot of interesting things, as did Dimitri. Chris answered you in a very perceptive way. This is why we are here again, because the play, the game between questions and answers can never be stopped. It is the nature of man. You recall the philosophical basis, the fundamental question "What man he is? What is man?". And if I may make a suggestion, I think that all future discussions could be helped if, in every activity we do not separate thinking and doing, because it is not possible to separate these things. I think it is no longer possible to use a dialectical or oppositional model of thinking. There is another model, which is the cognitive one. This involves putting together a game between question, answer, feedback, control and evaluation; but that means that this attitude must also be present in the teaching. We cannot separate them. I am a teacher, but I am also a professional and a researcher. Why are we always asking the same questions: what is research, what is teaching, where does one stop and others begin? Perhaps, we have to do different things at different times. But this means that we are obliged, that it is our responsibility, to explain to our students that it is not possible to divide the world in this way.

There are these three questions, how, what and why; but the fundamental one is why, namely, for what reasons we make or think something and for what goals we are making or thinking or designing. I think that in accepting differences – because differences exist, they are the salt of life – we must also accept that we will never be able to stop these kinds of discussions. It is against human nature. We have to accept, but we also have to point out the reasons for which we meet, we think, we make, we draw, we explain, we make calculations, and what our objectives are. Only in this way can we put all our activities– thinking, doing – to the best use, starting from the convention. I mean in my opinion it is not possible or at least it is not useful to separate thinking from doing. You do not do anything without thinking and you can think anything without doing, or at least it is not useful to think without hoping that it will be able to change the quality of life. Phi-

losophy is not thinking for thinking; the great lesson of the ancient Greeks is that love of knowledge is not for knowledge itself, it is essential for the development and advancement of human nature; and architecture is the only activity, the only part of human life that no one can escape, for everyone is obliged in some way to interact with architecture.

I think that after eight years of discussion, this attempt to use a critical review of the three last volumes of the proceedings could be a useful new starting point for our future discussions if we accept that there are some problems that cannot be solved in a homogeneous way. We have to accept that some schools will continue to use the five-year curriculum without dividing it into 3+2 or whatever, but that is not important. The important thing is to have good information, good communication, to know each other better; but the really important thing is that in the future we can show how we follow these intentions through, explaining to ourselves, to our students and to our colleagues why we do what we do, for what reasons and for what goals, using the various materials that architecture commonly uses, in the different scales – because scale is very important, of course.

Constantin Spiridonidis, Thessaloniki, Greece

To remain open is certainly one of the most interesting pre-suppositions for a school of architecture and generally for an educational system. I have to ask myself if this openness is always present in our research, our activities and our innovation plans. I have a feeling that schools of architecture are resistant to the new things that happen around them. Innovation normally appears outside the schools, architectural avant-garde is produced mainly outside the schools, and the new ideas that come from outside do not very often find fruitful ground in which to develop. In our schools we are not very friendly towards new things and often, we can follow very strong polemics to keep the doors and the windows closed in order not to let these 'strange' things that happen outside appear inside the school. When we are speaking about research and innovation, what exactly are we talking about? I mean, how is it related to what happens in society regarding architecture? I am afraid that our schools only accept innovations that are already legitimised within the social and cultural framework of the environment where the school exists, that is to say, when innovations have already lost their innovative character. There is an issue of how we will become or how we will remain open. So I would just like to have Chris's answer to that if possible, and I am sure that she has a lot to say.

Chris Younes, Clermont-Ferrand, France

It is difficult for me to express myself in English, but I will try to go ahead with this, because I think that now we are really in a new world. It was said that a lot of people are turning to the philosophy of the enlightenment because the eighteenth century was the age of reason, and there is a kind of will, a desire, a belief that reason can be create an alliance between men. Even if it is not easy to be reasonable. But that is not all they have given us: their thinking was directed towards solving problems, towards inventing solutions to problems like ours today with the ecosystems, the scale of the planet. We need science, but we also need to advance science through practice. So that is why I think it is important, and why in my lab we work a lot with books but we try to work with projects too, because we can invent in practice as we do in the lab. And what is a pity is that we do

not have enough exchanges to generate new problematics; and as you said there is, I think, a new tradition, a new way in research, in all kinds of research, which is the belief that it is possible and necessary to mix objectivity with subjectivity. This is a big change. I think – but I am in love with schools of architecture, because I am in love with architecture – that in schools of architecture, in spite of all our defects and our passions, etc., we have invented a kind of education that is very interesting because it is very open. When you go into another kind of education it is more limited, you do not have so many subjects. You have to be in technical science, basic science, aesthetics, ethics, and so on, and it is impossible to avoid any of them. I think it is very interesting to see, in our tradition, how we can use this tradition to be able to exist in the big market, because of course we have to be competitive.

One big problem is that we are too isolated. That is why, when I came five years ago to Hania, when I was in charge of research and teaching in my school, I found the will and the desire to listen, and not to fight first; and I find the same thing again today, and I think that that is very, very important. It is not exactly the same in the schools, perhaps. They are not so open-minded as we try to be in this kind of network, and while I know it is not easy I think that it is absolutely necessary. And what we have to do is to try, together, to find some way of interconnecting. We need to have discussion; this isolation needs to be lost. And maybe the time has come, because the big discussion today is that of university versus multiversity. There is a big gap between these two positions, and the schools of architecture may help in this economy of challenges, in this economy of knowledge, because it is impossible to separate them. Any school that tries to separate them will not succeed because we need to link them. C'est que nous avons hérité de la tradition de l'enseignement de la architecture.

Julian Keppl, Bratislava, Slovakia

I must say that I very much liked what Chris spoke about invention, and I am now going to explain why by means of one question: in architecture we know of many inventions, but do you know of any discovery?

Dimitris Kotsakis, Thessaloniki, Greece

Just a short answer to the question of what is research. I know two answers; the answer of the merchant and the answer of the creator (I do not say the producer). The merchant says: "research is the production of innovation. I can throw it in the market and make money out of it". The creator says: "research is the quest for truth and there are three kinds of truth, theoretical truth, moral truth and aesthetic truth".

Richard Foquè, Antwerp, Belgium

Maybe I will add another definition of research. I was listening very carefully, Chris, and I think that it has everything to do with this field of tension between nature and culture. And I am reminded of a little essay by Herbert Simon, in which he calls design "the science of the artificial". It is a very nice definition, and reflecting on that you could say that the traditional scientific approach to research tries to answer the question of how the world is, whereas design, I think, tries to answer the question of how the world could be.

And I think that might also be another way to approach what research could be.

Dimitris Kotsakis, Thessaloniki, Greece

The point is that there is always a mistake about truth. The truth is not finding what there is, otherwise there would be no moral or aesthetic truth, it would be only theoretical truth, yes?

Chris Younes, Clermont-Ferrand, France

Yes.

Constantine Spiridonidis, Thessaloniki, Greece

Thank you very much for this discussion. Thank you very much for this interesting intervention, Chris, and again, thank you very much for accepting to undertake this difficult task.

The idea of closing this session with the presentation of Les Grands Ateliers was based on the fact that this laboratory, if one could call it that, is a unique place in Europe, where innovative teaching takes place with regard to construction materials and new tendencies in this domain. Les Grands Ateliers l'Isle d'Abeau is a member of our network, a member of our association, and Myriam Olivier, who is the director of Les Grands Ateliers, will present to you the programme of their innovative teaching approaches. Please welcome Myriam Olivier.

Les Grands Ateliers: un espace original et unique de formation et de recherche pour la construction

Myriam OLIVIER

Directrice Les Grands Ateliers, l'Isle d'Abeau, FRANCE

Résumé

Les Grands Ateliers, Groupement d'Intérêt Public, ouverts depuis 2002, ont été créés par 11 établissements d'enseignement supérieur et un centre de recherche, le CSTB*. Ils sont soutenus par le Ministère de la Culture et de la Communication et par le Ministère de l'Équipement, ainsi que par les industriels fabricants de matériaux de construction (bétons et ciments, matières plastiques, aciers, bois). Ils ont pour mission de réunir en un même lieu des artistes, des architectes et des ingénieurs, pour, ensemble, concevoir, élaborer et réaliser des modules de formation, des travaux de recherche et des opérations de diffusion de leurs savoirs et savoir-faire dans le domaine des matériaux, des objets d'art et de design, de la construction et de la qualité des espaces habités.

Le concept des Grands Ateliers est basé sur deux approches complémentaires :

- l'une physique, représentée par le bâtiment situé à Villefontaine, où se réalisent les activités enrichies grâce à la mixité culturelle (architecture, art, ingénierie, design, industrie) et où la manipulation des matières et des structures de taille réelle permettent la confrontation du comportement physique avec les théories et les modèles numériques,
- l'autre plus virtuelle, dans laquelle les Grands Ateliers sont le centre d'un réseau permettant la mise en relation des mondes professionnels et de l'enseignement, et ceux des artistes, des architectes et des ingénieurs, pour la réalisation de projets transversaux.

Grâce à leurs installations uniques, les Grands Ateliers ont permis, depuis leur ouverture, à plus de 6000 étudiants, français et européens, de découvrir le monde de la construction au travers d'approches pédagogiques inédites dans les écoles. D'autres activités, ouvertes également aux professionnels et au grand public, y sont organisées, telles que les semaines thématiques ('les bétons' en 2003, 'le bois et les fibres végétales' en 2004, et 'les aciers' en préparation), des conférences internationales, des expérimentations de structures, des réalisations d'œuvres d'artistes et des ateliers d'été. Toutes ces activités ont pour but de faire mieux se connaître entre eux les acteurs de la construction, et de mieux appréhender les savoirs nécessaires à chacune de ces cultures constructives.

L'ensemble des activités qui se déroulent aux Grands Ateliers se retrouve sur le site Internet www.lesgrandsateliers.fr.

Concept des Grands Ateliers

Les Grands Ateliers, ont pour mission de réunir en un même lieu des artistes, des architectes et des ingénieurs, pour, ensemble, concevoir, élaborer et réaliser des modules de formation, des travaux de recherche et des opérations de diffusion de leurs savoirs et savoir-faire dans le domaine des matériaux, de la construction, de l'art et du design, et de la qualité des espaces habités.

Les Grands Ateliers sont ouverts aux étudiants et aux enseignants et chercheurs des écoles d'art, d'architecture et d'ingénieurs de la France entière, ainsi qu'aux professionnels de la construction.

Les activités et les recherches que les étudiants issus des écoles membres mènent sur place participent à leur formation technique, théorique ou professionnelle et s'inscrivent de manière complémentaire à leurs activités pédagogiques régulières.

Les Grands Ateliers sont un Groupement d'Intérêt Public créé par 11 établissements d'enseignement supérieur et 1 centre de recherche, et soutenus par les Ministères de la Culture et de l'Équipement, ainsi que par les industriels fabricants de matériaux de construction.

Le concept des Grands Ateliers est basé sur deux approches complémentaires:

- L'une physique, représentée par le bâtiment situé à Villefontaine, dans lequel s'organisent des activités dont la plus-value est apportée par la mixité culturelle (architecture, art, ingénierie, design, industrie) et par la manipulation de matières et des structures qui abordent la création technologique et à la qualité de la transmission des connaissances. Les activités de formation et de recherche qui se déroulent aux Grands Ateliers sont conçues avec et par les enseignants et cher-

Concept of Les Grands Ateliers

Les Grands Ateliers have a mission of gathering, in a same space, artists, architects and engineers in order to, together, conceive, elaborate and realise training modules, research works and diffusion operations of their knowledge and know-how in the field of materials, construction, art and design, and quality of inhabited spaces.

Les Grands Ateliers are open to students and professors and to searchers in art, architecture and engineer schools from the entire France and from Europe, and to the construction professionals.

The training and research activities students from member schools lead on place participate in their technical, theoretical or professional curricula and fit in a complementary way into their regular educational activities.

Les Grands Ateliers, a 'Groupement d'Intérêt Public', were created by 11 establishments of higher education and one research centre, and are supported par the Ministry of Culture and Equipment as well as by the industrials manufacturers of construction materials.

The concept of Les Grands Ateliers is based on two complementary approaches:

- One, physical, represented by its building in Villefontaine, inside which are organised activities whose profit is brought by cultural mixity (architecture, art, engineering, design, industry), by manipulation of materials and structures which tackle technological creation, and by the quality of transmission of knowledge. The teachers and searchers of the member schools conceive the research and training activities that take place in Les Grands, in close collaboration with the industrials of

cheurs des écoles membres, en collaboration étroite avec les industriels du milieu des matériaux de construction. Elles s'inscrivent en complémentarité et en prolongement des programmes pédagogiques des écoles partenaires. Les Grands Ateliers permettent la conception d'autres modes d'enseignement comme l'expérimentation en grande taille, la formation des formateurs et des professionnels, la recherche à but technologique et la formation par la recherche, les travaux et séminaires en groupes inter-écoles, ou encore les travaux personnels d'étudiants encadrés par des personnalités extérieures à leurs écoles.

- L'autre plus virtuelle, dans laquelle les Grands Ateliers sont le « hub » d'un réseau permettant la mise en relation des mondes professionnels et de celui de l'enseignement, et des cultures des artistes, des architectes et des ingénieurs. Les Grands Ateliers sont un espace de rencontre et de connexion entre ces univers où il devient possible de construire des partenariats pour élaborer des projets sur des thématiques de société qui nécessitent des approches interculturelles. Les Grands Ateliers permettent et suscitent l'échange des idées afin d'avoir une meilleure connaissance et compréhension des autres intervenants de la construction.

L'innovation pédagogique et technologique est placée au cœur des réflexions des Grands Ateliers ce qui permet

- d'élaborer de nouvelles activités de formation et de projets aux interfaces des cultures constructives, souvent trop étanches, de l'art, de l'architecture et de l'ingénierie, enrichissant ainsi les propres cursus de formation et de recherche des écoles,

construction material circles. They fit in complement and extension of the educational programs of the partner schools. Les Grands Ateliers allow the conception of other modes of teaching such as experimentation in large size, training for trainers, research with a technological goal and formation by research, works and seminars in inter-school groups, or personal works of students trained by personalities that are external to their schools.

- The second, more virtual, where Les Grands Ateliers are the 'hub' of a network allowing the creation of relations between the professionals and educational worlds and the artists', the architects' and the engineers' cultures. Les Grands Ateliers are a meeting and connection point where it becomes possible to construct partnerships in order to elaborate project based on social thematic that need intercultural approaches. Les Grands Ateliers allow and arouse the exchange of ideas in order to have better knowledge and comprehension of the other contributors in construction.

Technical and educational innovation is placed in the centre of reflections of Les Grands Ateliers, which allows:

- To elaborate new training activities and projects at the interface of the constructive cultures, most of the time too withdrawn, of art, architecture and engineering, enriching by this way the proper educational and research degree courses of schools,

- de donner à leurs étudiants la possibilité de manipuler les matériaux et de construire des objets et structures en vraie grandeur et de grande taille, ce qui était peu fréquent dans la plupart des établissements faute de moyens en espaces approprié et en matériels,
 - de développer des actions pluridisciplinaires de recherche, réunissant chercheurs et professionnels autour de thématiques transversales,
 - d'organiser des rencontres et des échanges de vues entre milieux de l'enseignement et le monde professionnel en vue de monter des projets interdisciplinaires, sources d'innovation et de création en construction.
- To give to their students the opportunity to manipulate materials and manufacture full scale and large size objects and structures, what was rare in most of the establishments due to the lack of means in appropriate spaces and materials,
 - To develop multi-disciplinary research actions, gathering searchers and professionals around cross thematic,
 - To organise meetings and exchanges of views between the circles of teaching and the professional world, in order to build up inter-disciplinary projects, sources of innovation and creation in construction.

L'ensemble des activités qui se déroulent aux Grands Ateliers est présenté sur le site Internet www.lesgrandsateliers.fr

The programme of activities held in Les Grands Ateliers is given on the website www.lesgrandsateliers.fr

Un Large Eventail D'activités

Ouverts depuis janvier 2002, les Grands Ateliers ont déjà accueilli près de 6000 étudiants de l'enseignement supérieur et plus de 3000 visiteurs dans les manifestations de CSTI.

Les activités de formation réalisées aux Grands Ateliers sont conçues spécialement pour apporter aux étudiants des savoirs difficilement transmissibles dans leurs établissements. De plus, les Grands Ateliers permettent le montage d'actions originales de recherche et d'innovation, et de diffusion de savoirs, grâce à leurs moyens et capacités.

La formation supérieure

Les Grands Ateliers donne la possibilité aux établissements d'enseignement supérieur de concevoir et réaliser des formations selon une pédagogie totalement inno-

A Large Range of Activities

Open since January 2002, Les Grands Ateliers have already welcomed nearly 6000 students of superior education and more than 3000 visitors during the exhibition on scientific culture.

The training activities realised at Les Grands Ateliers are specially conceived to bring the students knowledge transmitted with difficulty in their establishments. Moreover, due to their means and capacities, Les Grands Ateliers allow the assembly of original actions of research and innovation, as well as of diffusion of knowledge.

Higher education

Les Grands Ateliers give the possibility to higher education institutions to conceive and realise trainings according to a very new education, linking project to con-

vante, reliant le projet à la construction, et mêlant l'acte de conception intellectualisé à celui de la création par la manipulation.

Ces unités d'enseignement sont totalement intégrés aux programmes des établissements, et couvrent des thématiques très variées, par exemple :

- matériaux, matière et performances, matériaux et usage, matériaux art et architecture,
- structures, systèmes constructifs, technologies de construction,
- espace habité : perception, organisations spatiales, qualité esthétique et sensible, ambiances sonores, lumineuses, confort,

Des actions de formation permanente sont régulièrement organisées en direction des enseignants et des professionnels, notamment sur la connaissance des matériaux (bois, nouveaux bétons, matières plastiques) et sur les risques majeurs naturels (initiées sur les problèmes sismiques).



Figure 1. construction en blocs de pierre Ecole d'Architecture de Paris-Malaquais

Les activités de formation montées aux Grands Ateliers peuvent en général être classées dans l'un des 3 grands domaines suivants:

struction, and combining the intellectualised conception act to the one of creation by manipulation.

These teaching units are totally integrated to the establishments' programs, and cover varied thematic, for example:

- Materials, substance and performance, materials and use, materials art and architecture,
- Structures, constructive system, construction technologies,
- Inhabited spaces: perception, spatial organisations, sensitive and aesthetic quality, resonant and lighting atmospheres, comfort.

Continuing education is regularly organised for the teachers and professionals, notably on the knowledge of materials (wood, new concretes, plastics) and on major natural risks (initiated on seismic problems).



Figure 2. « Mobilier urbain en béton » Ecole d'Architecture de Clermont-Ferrand et INSA de Lyon

The educational activities implemented in the Grands Ateliers can, in general, be classified in one of the following domains:

- matériaux et comportement des structures,
- construction et espaces,
- ambiances.

Elles permettent de développer plusieurs types de savoirs et de compétences chez les étudiants:

- savoirs professionnels, tels que l'appréhension de l'espace, le passage du modèle au réel, la compréhension des phénomènes physiques liés à la matière, capacités d'usage des objets et espaces créés,
- formation personnelle : préfiguration du chantier, découverte des autres cultures,
- innovation pédagogique : expérimentation, délocalisation, capitalisation, valorisation, ...

Les activités d'expérimentation et de création/innovation

Les Grands Ateliers peuvent accueillir des étudiants ou des artistes en « résidence » pour leur permettre d'expérimenter et d'approfondir un thème de travail dans le cadre de stages, de mémoire de 2e ou 3e cycle, d'un diplôme de fin d'études, d'une formation de 3ème cycle ou d'une thèse. Les Grands Ateliers peuvent également mettre en réseau et constituer des équipes inter-disciplinaires entre artistes, étudiants et chercheurs, industriels et professionnels, dans le cadre de recherches, d'expérimentations, de réalisation d'œuvres artistiques ou de prototypes.

Les Grands Ateliers donnent aussi l'occasion aux concepteurs de concrétiser et de tester la faisabilité de projets tels que ceux qui sont conçus pour des concours ou avant réalisation sur site réel. Des prototypes ont ainsi été réalisés avec les lauréats des concours Art Nomade et de Mini-

- material and behaviour of structures,
- building and space,
- ambiances.

They make it possible to develop different type of knowledge and competencies for the students:

- professional knowledge, such as understanding and grasp of space, going from the model to reality, understanding physical phenomena linked to matter, usability of objects and spaces,
- personal education : experimentation of site work, discovery of different cultures,
- pedagogical innovation : experimentation, relocation, recording, value adding, ...

Activities of experimentation and creation/innovation

Les Grands Ateliers can welcome students or artists in 'residence' to give them the possibility of experimenting and deepening a work theme within the scopes of stages, second or third year reports, end of study diplomas, PhD formations, or thesis. Les Grands Ateliers can also create networks and inter-disciplinary teams between artists, students and searchers, industrials and professionals, in order to conduct research actions, experimentations or realisation of artistic works or prototypes.

Les Grands Ateliers give also the conceivers an occasion of concretising and testing the realisation of projects as those that are thought of for competitions or before realising them on real sites. Prototypes have been realised this way with the prize-winners of the competitions Art Nomade and Minimaousse, or with architecture agency (cardboard frame and smelting works for

maousse, ou avec des ateliers d'architecture (ossatures carton et fonderie pour l'architecte Shigueru Ban).



Figure 3. Construction d'un prototype de toiture autoportante en Béton Fibré Ultra Hautes Performances

Les ateliers d'été accueillent de nombreux étudiants qui collaborent à la réalisation d'expositions (semaine bétons 2003, semaine Bois et Fibres végétales 2004, semaine métaux 2005), ou qui participent à des Master Class comme celle de l'installation de l'artiste (Aki Kuroda, Biennale d'Art contemporain de Lyon 2005).

Les actions de valorisation et diffusion

Les Grands Ateliers, espace unique d'innovation pédagogique et technologique, mettent en place les outils et les moyens de capitalisation et de diffusion de ces savoirs et expériences réalisées sur son site. Ces actions prennent des formes multiples et sont complémentaires, notamment:

- le projet GA-média, en service en septembre 2005, et lancé avec l'aide de la région Rhône-Alpes, a pour but de mettre à disposition par internet à l'ensemble de la communauté enseignante, des données d'origines et de format divers à partir d'un même moteur de recherche, www.ga-media.org

architect Shigueru Ban).

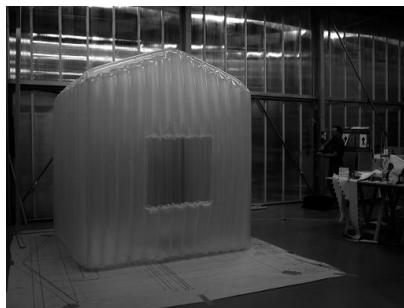


Figure 4 : « Mini maousse » réalisation des prototypes des lauréats du concours organisé avec I'IFA

Summer workshops welcome numerous students who collaborate on the realization of exhibitions (week Concrete 2003, week Wood and vegetal Fibres 2004, week Metals 2005), or who participate to some Master Class such as the installation of artists (Aki Kuroda, contemporary Art Biennale of Lyon 2005).

Valorisation and diffusion

Les Grands Ateliers, sole space of educational and technological innovation, set up the tools and means of building up and diffusing its knowledge and experience realised on its site. These actions take various forms and are complementary, notably:

- The GA-media project, into service in September 2005, and launched with the help of the Rhone-Alpes region, which has the goal of putting at disposal on internet to the whole of the teaching community data of various origin and format from a sole browser, www.ga-media.org

- l'accompagnement pédagogique des activités innovantes de formation,
 - la publication de livres et l'édition de cahiers au service de l'enseignement,
 - l'organisation de séminaires, rencontres, colloques internationaux,
 - l'organisation de manifestations et d'évènements : semaines thématiques qui déclinent expositions, ateliers, conférences, visites (Grains d'Isère, semaines « le matériau dans tous ses états » - bétons, bois et fibres végétales, métaux), installations d'artistes, ...
- The educational accompaniment of innovating activities of formation,
 - The publishing of books and the edition of documents in the service of teaching,
 - The organisation of seminars, meetings, international conferences,
 - The organisation of manifestations and events: thematic weeks composed of expositions, workshops, conferences, visits (Grains d'Isère, weeks 'materials in all states' - concretes, woods and vegetal fibers, metals), installation of artists, ...



Figure 5. Exposition sur « les bétons »



Figure 6 : Découverte de la construction en terre

Richard Foquè, Antwerp, Belgium

How do you run it financially?

Myriam Olivier, Lyons, France

The building itself was built by the French Government and the Rhone-Alpes Region, and now we are sort of independent, which means that the people who come pay for the use of the place and the materials. We also have some places for students who want to stay for a few days; just a ten minute walk away are rooms for the students and the professors, and schools or industrial groups who want to come rent a place. This is just a written agreement we have between the two institutions. It could be for one day or one week, and it could be for half the place. Usually I prefer to rent half the place, so that I can have different groups working at the same time, because it is so interesting to have them meet and talk together. If you rent half the space it would cost, with the studio and the workshop and the machines and everything, something like 3000_ per week, which is not extraordinary. Imagine trying to rent just a room like this one for a week. And we organise everything and buy in advance the material you need, and we can arrange contacts for you with other professors, other schools, industrial people and so on.

I forgot to tell you exactly where it is. It is very easy to get there. It is twenty kilometres east of Lyons, and very close to the TGV station from the Lyons-St.Exupery Airport. We can accommodate up to sixty students.

