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Modelling. Network. Code.

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An Introduction to ATINER's Conference Paper Series

ATINER started to publish this conference papers series in 2012. It includes only the papers submitted for publication after they were presented at one of the conferences organized by our Institute every year. The papers published in the series have not been refereed and are published as they were submitted by the author. The series serves two purposes. First, we want to disseminate the information as fast as possible. Second, by doing so, the authors can receive comments useful to revise their papers before they are considered for publication in one of ATINER's books, following our standard procedures of a blind review.

Dr. Gregory T. Papanikos
President
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Abstract

From time immemorial until the Renaissance one could not separate architecture from its education. Although there is evidence that architecture was discussed from antiquity by such important thinkers as Plato in Ancient Greece, Vitruvius in Ancient Rome and the master builders (Villard de Honnecourt, Mathes Roriczer, etc.) in the Middle Ages, there are no suggestions of formal courses taking place anywhere.

The Renaissance brought the first from a series of three dissociations (Tschumi, 1995) in the field of architecture: a schism between practice and theory. The following dissociations occurred under the auspices of their own socio-cultural revolution (Choay, 2006), leading to 'the moment of architecture's undeniable flourishing' (Koolhaas, 2006), yet paradoxically also the moment of its undeniable self-dissociation. One can acknowledge this moment as the fourth socio-cultural revolution: the Digital Era.

Despite the fact that we talk about three major dissociations, the way that architects have learned and worked changed significantly only after the digital began to influence the architectural society. It did so not only by replacing the old tools with new ones but by influencing architectural thinking as well. Since the field has never been as dissociated as it is now, the paper is to examine the way architecture is taught and learned in this advanced technological era.

This paper accordingly proposes a three part methodology of architectural education, unconsciously practiced, in the digital age ‘drafting|network|code’ in order to outline a possible first association. The methodology relates to the way that digital mediums are used and have impacted the architectural society: drafting relates to new tools, network to one of the main aspects of architectural education in this era - its ever more intimate relation with the profession, while code will emphasise the most significant aspect of the Digital Era that spans from the digitisation of existing book stocks to the creation of the computational design studios.

Keywords:

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Intro

‘We (architects&architecture) are for decorative purposes only.’
 Joshua Prince Ramus

‘Over the last 50 years the design and construction industry has gotten much more complex and has gotten much more litigious’ (Ramus, 2010) leading, amongst other things, to an ongoing debate over the status of architecture. Interest for the subject is shown by governments (The Danish Ministry of Culture’s 2006 Architectural policy, Danish Ministry of Culture’s new Architectural policy¹ expected by the 1st of October 2013, Britain’s Ministry of Culture architecture report² expected by the end of 2013 and so on), by the profession through the reports of the various unions/councils/chambers/orders of architects (such as, but not limited to, UIA’s 2003 Architectural practice around the world³ report, ACE-CAE’ 2008 and 2010 Sectorial reports, RIBA’s 2011 The Future of Architects report⁴, ACE’s The Architectural Profession in Europe 2012⁵, Ordre des Architectes⁶ - Les matinales des architectes of 2013), by the education system (the EAAE Transactions series⁷, conferences organised by different schools of architecture such as but not limited to the European Architectural Envisioning Association’s 2011 Envisioning Architecture⁸ conference hosted by the Delft Faculty of Architecture, the Architectural History and Practices Conference hosted by Chalmers Architecture in 2012, the Educating the Future: Architectural Education in International Perspective⁹ 2013 conference hosted by İstanbul Kültür University) and last but not list by the critique (Joshua Prince Ramus’s talk¹⁰ on TED, Patrik Schumacher’s The Autopoiesis of Architecture, Wolf D. Prix’s attack on the Venice Architecture Biennale¹¹, Domus Magazine’s December 2012 issue Europe’s top 100 schools of architecture and design 2013, Oliver Wainwright’s blog post¹² on The

¹ <http://www.dac.dk/en/dac-cities/architectural-policy/>

² <http://www.dezeen.com/2013/03/26/terry-farrell-to-lead-uk-government-architecture-review/>

³ <http://www.coac.net/internacional/ang/eamindexang.php>

⁴ http://www.buildingfutures.org.uk/assets/downloads/The_Future_for_Architects_Full_Report_2.pdf

⁵ http://www.ace-cae.eu/public/js/tiny_mce/jscripts/tiny_mce/plugins/imagemanager/files/Sector_study_2012/Sector_Study_2012_Final_EN140213.pdf

⁶ <http://www.architectes.org/actualites/propositions-de-l2019ordre-des-architectes-pour-l2019enseignement-de-l2019architecture>

⁷ <http://www.eaae.be/documents.php?show=publications&type=transactions>

⁸ <http://www.tudelft-architecture.nl/chairs/form-modelling-studies/research/eaae2011-conference>

⁹ <http://eaaeiku.iku.edu.tr/index.php/eaaeIKU/2013>

¹⁰ http://www.ted.com/talks/lang/eng/joshua_prince_ramus_building_a_theater_that_remakes_itself.html

¹¹ <http://www.dezeen.com/2012/08/30/venice-architecture-biennale-is-exhausting-bleak-and-boring-says-wolf-d-prix/>

¹² <http://www.dezeen.com/2013/06/03/guardian-architecture-critic-calls-for-overhaul-of-stagnant-uk-architecture-education-system/>

Guardian's website and so on). Browsing the above mentioned literature we can extract two very obvious conclusions:

- 1) the status of architecture diminished over the years to the point where we, architects, found ourselves in a 'totally marginalised position... way over here!' (Ramus, 2010) 'This is because politicians and project managers, investors and bureaucrats have been deciding on our built environment for a long time now. Not the architects.' (Prix, 2012)
- 2) profession and education take each the other into account but consider each other as two distinctive entities;

Foundations

'Theoretical practice does not build, it publishes.'
Bernard Tschumi

Accordingly we can state that trying to analyse architectural education without considering architectural practice is pointless. So, in order to analyse and approach architecture and its education from the same angle and to better understand their development, the paper will overlap two, apparently unrelated, theories thus establishing 'secure foundations' (Wigley, 1991) for its own thesis.

The first of the two is Bernard Tschumi's (1995) theory of the three dissociations. It postulates that architecture and its education had three defining moments which were Académie Royale, Ecole des Beaux-Arts and the socio-cultural events that took place during 1968. Each of these moments triggered major dissociations within the fields of architecture and architectural education as follows: between practice and theory, between the couple practice-theory and the production methods and between practice and theoretical-practice.

The second one is Françoise Choay's (2006) theory of the three cultural revolutions: the Renaissance, the Industrial Revolution and the electro-telematic revolution. The third cultural revolution is placed by the author in the last five decades having begun in the 1960s. We happen to disagree with the timeframe of this last revolution. A quick scan of the last five decades reveals two actual cultural revolutions taking place within this timeframe: the socio-cultural events that took place during 1968, also mentioned by Bernard Tschumi, and the Digital Revolution (Robinson, 2013).

Overlapping these two theories we can assert that every major change within society triggered major transformations and mutations within the fields of architecture and its education leading to the mentioned dissociations. A few landmarks are apparently missing from this equation. We will try in the next few paragraphs to put those landmarks in the context of the cultural revolutions and the dissociations that followed them. All of this will be, of course, in rapid-fire since this could be in itself a research topic.

Renaissance

The first one would be Academia Platonica. Even though the Académie Royale was created in the French Classicism's full swing, around 200 years later, it shares the same principles and goals as the above mentioned Academia Platonica. The cultural goal, the elevation of the architects from the status of craftsmen to that of intellectuals, covered a political goal of the pre-industrial age, the attack of the Craft Guilds that were considered to oppose free trade and hinder technological information, technology transfer and business development.

The creation of the two schools marked the first dissociation in the history of architecture and its education, a split between practice and theory. Since time immemorial architecture and its education were one and the same, theoretical education and practical training took place almost simultaneously and were defined by the relation master-apprentice. Never before could we have spoken of architecture schools and rarely if not ever an architect was known as a public persona.

Industrial Revolution

The second one would be the Ecole Polytechnique in Paris. In terms of architecture we are witnessing the birth of the formalist way of thinking that is slowly replacing the scientific way. The main reason for this change in architectural thinking is the speed of the Industrial Revolution which was unveiling new programs, without historical precedents, that were requiring the use of new techniques and materials in the building process. These new techniques were appropriated by the industry which developed its own construction processes independent of the architectural thought.

'This is the second dissociation, where architects have little control over the definition of building process. [...] Education flourishes. Schools of Architecture open everywhere.' (Tschumi, 1995) E.E.Viollet-le-Duc anticipates this dissociation after his short period at the Ecole by saying that if they do not change, architects are bound to become an endangered species and that they should follow the example set by the engineers. The latter were embracing these new building techniques with no reticence and were founding their new schools: Ecole Polytechnique, Ecole des Ponts et Chaussées, Ecole des Mines.

1968

The third would be Bauhaus which, Like Academia Platonica before it, was episodic but instrumental for what followed. In terms of architectural education the 1968 events signified a revolution against the Beaux-Arts system and it had as result the integration of architectural education in the University system. Two models of architectural education can be distinguished: the French model and the Anglo-Saxon model.

The French model is characterised by the creation of the UPA's (Unités Pédagogiques d'Architecture), independent units of architectural education, out of the old architecture units from the Ecole des Beaux-Arts and by its 1970 Plan Construction.

The Anglo-Saxon model is characterised by the integration of the old architecture units from the Ecole in the University system (Technical Universities, Metropolitan Universities, Arts and Crafts Universities).

Both models will be strongly influenced by Bauhaus' concepts and syllabus. Students became more aware of their academic context and began to develop their intellects by getting in contact with such fields as history, philosophy, kinetic arts, etc. Project proposals, hybrids of art/cinematography and architecture, gave way to very interesting propositions where the word theory played a key role. Out of this kind of architectural education a new type of architectural practice emerged: theoretical practice.

That leads me to the third dissociation. Theoretical practice does not build, it publishes. We increasingly witness within the ranks of architects themselves a split. This split is between the 'idea' architects, the media 'stars', the 'signature' architects, who do a well publicized sketch design, and the near anonymous firms that do all the working drawings and pay liability insurance. (Tschumi, 1995)

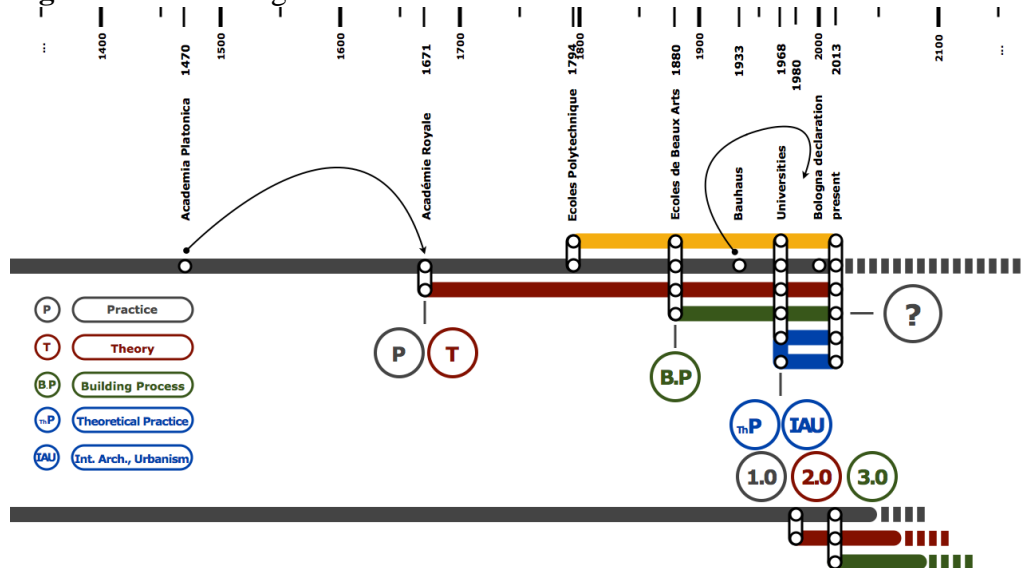
Apart of the split in architectural practice, one can notice another split, in architectural education. It entered the University system as one and it ended being separated in architecture, interior architecture, urban planning, urbanism and landscape architecture. Some schools of architecture are now awarding four type of diplomas across Europe and we are witnessing the creation of a another professional body, as equivalent to the institutes/chambers of architects, institutes/chambers of urbanists or urban planners.

Digital Revolution

A fourth landmark that must be considered is the Bologna Declaration signed in 1999. This process together with the Erasmus programme nearly fulfilled Cedric Price's 1966 National School Plan: 'uniting Europe's schools into a modular, flexible system of exchange' (Shaw, 2012) in the Digital Era. The origins of the Digital Revolution are placed at the beginning of the 1980s. It should coincide with the birth of the Personal Computer (PC) concept which emerged in the previous decade but only reached a certain maturity towards 1980 with the launch of applications like VisiCalc and WordStar (Wurster, 2002). The transformation of the PC from a 'product for electronics enthusiasts' (Cenan, 2009) into a working tool allowed it to start infiltrating almost immediately all the layers of society and igniting the Digital Revolution.

A graphical representation of this approach led us to this metro line like map (see Figure 1). We believe that based on the analysis of architecture and its education's past from the same angle we can, standing still, raise questions about their future. Are we to expect (an)other dissociation(s)? Or, on the contrary, expect certain associations that will take place in the light of the Digital Revolution?

Figure 1. Title of Figure



‘The species problem’ (Wilkins, 2010)

Our thesis shows that, Despite Ramus (2010) and Wainwright’s (2013) reference to the diminishing role of the architect in the last 50 to 60 years, this is actually an ongoing process that started long ago and it only accelerated in the last 50 to 60 years. We can but return to the endangered species remark made by Viollet-le-Duc and notice that both society and architecture interact in ‘parallel and mutually constitute each other dynamically, each adapting to changes in the other and they shape each other in a complex way. For the reasons mentioned above we can speak about a coevolution.’ (Fantini van Ditmar, 2011).

Of course coevolution implies two species or one species and an environmental factor. We will go for the second option and consider society as an environmental factor and architecture as a species. Why a species? one might be entitled to ask? The answer is really simple... because, as we’ve already seen, the stake is survival.

A look into the ‘species problem’ will unveil a little under 30 biological definitions for species. But, as Wilkins (2010) explains, there is only one species concept out of which the others are ‘conceptions’: ‘those groups of organisms that resemble their parents’. The issue of reproduction or heredity must be also raised within this context. We’ll appeal to Lamarck’s theory of soft inheritance to describe the hereditary process of architecture as a species: architects can and do acquire characteristics/skills in the course of life that are passed on (through education) to the succeeding generation.

The two key elements of this hereditary process of architecture are education and profession. As our thesis shows they have separated as a result of the changes that occurred in society during the Renaissance. In order to ensure the survival of architecture as a species we need to re-engineer the relation between the two. They need to work seamlessly, as software and hardware with the same architecture do.

Architect 1.0. Architect 2.0 . Architect 3.0...

Despite the fact that we talk about three major dissociations, the way that architects have worked changed only after the PC began to influence the architectural society. We therefore propose, before looking into architectural education, a quick scan of the influence of the digital upon the profession.

Finding inspiration in computer software’s assembly versioning¹ and in Cenani’s (2009) *Istoria utilizării calculatorului și arhitectura. De la CAD la BIM*² we will try the following classification of architects³:

Architect 1.0 (up until the 1970s): even though we know from L. Hasselberger’s (1985) research at Apollo’s temple at Didyma that ancient Greeks might not have needed paper; or as earlier suggested by J.J. Coulton (1977), once the orders were established, they might not have needed even drawings, architects carried their work on the same principle, hand drafting, and using the same tools (compass, square, etc.).

Architect 2.0 (1970-1980)

It is the decade in which the first personal computers are launched: Altair 8800 (1974), Xerox-Alto, (1974) Apple I and II (1976 and 1977), TRS-80 Commodore PET (1977) and so on.

Two architectural experiments using computers were conducted. The first one, called Reptile (repetitive tile), was conducted by John Frazer at Cambridge University. The second, Generator Project, was conducted by Cedric Price in 1976 at the request of the Gilman Paper Corporation. The decade marks the birth of a new tool that will replace the old ones and the birth of the concept of what is called today CAD (computer aided design).

Architect 2.1 (1980-1990)

¹[http://msdn.microsoft.com/en-us/library/51ket42z\(v=vs.71\).aspx](http://msdn.microsoft.com/en-us/library/51ket42z(v=vs.71).aspx)

²trad.ns: History of computer use and architecture. From CAD to BIM

³We will only use two out of four items from the assembly version number - major version and minor version.

Computers get faster, smaller, sleeker and most importantly affordable. The decade is also marked by the democratisation of the CAD software for the mechanical industries as well as the launch of the CAD software for architecture. In 1982 Autodesk launches AutoCAD and Graphisoft launches ArchiCAD. In 1984 Bentley Systems launches PseudoStation which will later become MicroStation.

Skidmore,Owings&Merill's major projects of the decade using the computers and CAD software (e.g. Kuwait Insurance, Malaysia Corporate) lead the practice to the conclusion that the product of an architect's work using computer technology is information and not drawings. Menil Collection, of Renzo Piano Building Workshop, is one of the first buildings of the decade to be designed and delivered using CAD software in a 5 years timeframe (1981-1986). Piano's politics of using CAD software on this project was that the team needed to understand each element of the building and the building as a whole before integrating CAD technology in the work process. It was the architects belief that the simple use of CAD technology can lead to superficial solutions leaving any project unfinished.

Architect 2.2 (1990-2000)

This decade is marked by a paradigm change, the computer is perceived as a fundamental tool in the development of the project, as well as by communications - the internet. We are witnessing the architecture CAD software market establishing its key-players: Autodesk, Dessault Systems, Bentley Systems, Graphisoft, Nemetschek N.A.

Amongst the projects that were on the cutting edge of both design and construction technology one can consider The Eden Project by Grimshaw Architects in Cornwall, Ghery's Walt Disney Concert Hall in Los Angeles, Foreign Office Architect's Port Terminal in Yokohama and so on. Whatever the case computer technology becomes a sine qua non element in architectural practices across the world and starts influencing design decisions and architectural conception.

Architect 2.3 (2000-2010)

The past decade was the launching platform of the object oriented CAD. That was the moment that lead to the concept which is currently replacing Computer Aided Design and is called Building Information Modelling (BIM). The idea is to replace the CAD way of woking (which basically mimics with it's two dimensional layers, the way architects designed on their drawing boards using spreadsheets) with a way of working where the sheets are the result of the virtual 3D model. The concept is borrowed from other industries such as the automotive industry and aircraft industry. There is still no definition of the BIM process that is platform independent. Each major

software vendor will try to define it in its own way. ‘BIM represents for architectural design what hypertext meant for the internet, connections.’ (Cenan, 2003) The process of implementing BIM is, however, an ongoing one, as it ‘is not yet a perfect process, we shouldn’t kid ourselves, these are the formative days and we work pretty much in the forefront of BIM today’ (Tims, 2011). Rice Daubney delivered in 2010 Australia’s first completed BIM high rise and shared¹ some of the problems they had during the process: the lack of protocol in the industry, cost of BIM software (and hardware capable of running BIM software), consultants (structural engineers, service engineers, etc.) who are not getting into BIM leaving a lot of their work to be implemented in the model by architects, lack of understanding BIM concept from clients, contractors, subcontractors, etc.

In what concerns architecture examples of this decade we need not look very far. One might even attempt to say that it was the decade of star architecture or, as Koolhaas (2006) stated, ‘the moment of architecture’s undeniable flourishing’, yet paradoxically also the moment of its undeniable self-dissociation.

Modelling. Network. Code.

‘We are now starting to see the first generation of architects that have only ever known 3D.’
Darren Tims

In 2012 we began an inventory/classification of EU’s and Switzerland architecture schools. So far we managed to identify 322 architecture schools spread along a system that is divided between the state and private sector in independent units as well as units integrated as faculties/schools/departments in 5 types of universities². Relying on this scan, on our ongoing case study survey³ (Figure 2.) and last but not list on Domus magazine’s scan of 34 architecture schools we can safely postulate that architectural education in the Digital Age is done according to a 3 part, unconsciously practiced, methodology that we titled Modelling. Network. Code. The methodology relates, but it is not limited, to the way digital mediums are used and have impacted the architectural society.

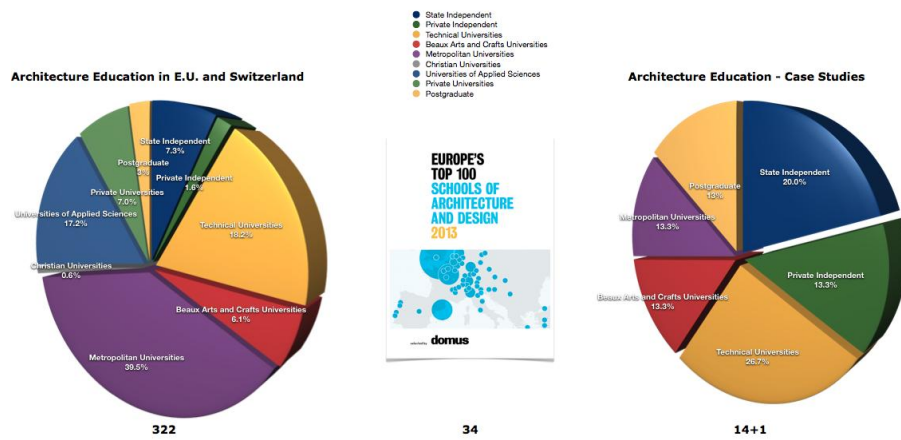
As Darren Tims observes schools are past the drafting phase. Computers, that until recently served as a replacement for the old drafting tools, are now being used for modelling. Of course that one cannot draw a clear line between the two at the moment and we consider that we are in a moment where the two overlap... but the baton is being passed on to modelling.

¹<http://www.youtube.com/watch?v=7V5cLCjKpJM>

²Technical, Art, Metropolitan, Christian and Arts and Crafts.

³We began spreading our survey to 15 case studies in the 22nd of May and so far received answers from Aarhus and Delft and a promise from Luca Arts.

Figure 2. Architecture education in the EU and Switzerland



The second part of our methodology, network, tries to capture the specificity of Digital Era's architecture as a profession. This is done in order to underline one of the main aspects of architectural education in this Era - it's ever more intimate relation with the profession. One can identify a number of networks that within architecture schools: between students in the form of student organizations, between students and professors/tutors that can be faculty members or guests and networks that are formed during/after events like workshops, conferences or project exhibitions. Other type of networks are formed between architecture schools themselves through various scholarship programs and through academic relations from research and PhD programs. Two approaches, however, bring schools closer to the profession and, in our opinion are bound to set a standard. One would be a certain increase in the number of professionals invited to take part in the academic life - the richer the school the more famous the body of architects invited will be. 'Many cannot afford to even think of going towards the celebrity end. But the basic ambition of schools, like that of each member of faculty, is to move towards the right hand side of the graph, maximizing the contact with the force of fame, paradoxically bringing the professional world into the school by allowing the faculty to be out of the school so much.' (Wigley, 2007) The other one is the creation of interdisciplinary school studios and/or school studios/departments which try to mimic/explain the working conditions of an architecture practice by bringing in consultants and collaborators.

In our wish to emphasize the most significant aspect of the Digital Era we called the third part of our methodology code. Code is used in architectural education from the use of Information and Communication Technologies, through the digitization of existing book stocks in the schools libraries and birth of the Virtual Knowledge Centers to the creation of the computational design studios/groups/institutes.

Professor/Tutor 1.0. Professor/Tutor 2.0 . Professor/Tutor 3.0.?

‘People who are really serious about software should make their own hardware.’
Alan Kay

As we’ve seen the rhythm of the erosion of the status of architecture has accelerated over the last 50 to 60 years transforming the way (especially young) architects practise to the point where ‘In 10 years’ time we will probably not call ourselves an architecture practice, it will be something else entirely.’ (small metropolitan boutique practice, 2011) These changes lead Will Hunter (2012) to question ‘if architecture students need to learn more about how to operate in the real world, why not provide a route for their education outside the university campus altogether?’. A quick look at our metro line like map and considering Mark Wigley’s (1991) theory of the ‘disciplining of architecture’ will show us that the long dance between architecture and university culminated only recently, at the scale of time, with the admission of architecture as a discipline of the university. Moreover, all the other actors of our industry, from sub-consultants to politicians that contributed to the erosion of architecture’s status by their proliferation (Wainwright, 2013) and decision making, draw their education from the same system, from the same university campus.

We would argue that another ‘step back’ (Ramus, 2010) would not benefit the cause of architecture, on the contrary. The acceptance of architecture into the university system after the 1968 events transformed it by making architecture students more aware of their academic context. We believe that the position of the school of architecture within the university system is not yet exploited at its maximum potential. It should make professors/tutors more aware as well, as near to 60% of the schools of architecture from EU and Switzerland are integrated within universities that encompass at least three faculties that train future engineers and consultants that will design alongside architects. So aside the possibility of architecture students to take part in courses or lectures from other disciplines within the university we think that the school should approach or integrate in its curriculum projects that engage professors/tutors and students from different faculties/schools/departments of/but not necessarily the same University. Already there are studios that invite professors/tutors from other disciplines, like structures for instance, that give feedback on architecture students’ projects. The challenge lies in creating a student networks that work together on school projects much like what is happening in Solar Decathlon. This process would speed the encounter between future actors of our industry thus offering the possibility to fix sooner much of the problems that we now face as an industry.

As Daren Tims explains, a big part of project time is dedicated by architects to modelling structures, MEP, HVAC and so on, because their various consultants don’t yet work this way. If the new tools that are advocated to be the future of the industry, like BIM, will be taught and used within this framework it would give us a distinct advantage. It would not only provide a

platform for architecture students to develop their communication, coordination and synthesis skills but also offer the possibility to train their future collaborators in the art of modeling. We therefore believe that engineers and consultants would start adopting BIM within their future practices thus clearing at least part of the architects agenda.

As we've seen the Digital Era marks an unconsciously integration of education(theory) and practice. We don't mean by that a turn back in time when practice and theory were one and the same. It is a process that already began with the approaches we acknowledged in our methodology, but that needs to go further to the point in which it can develop a constructive dialogue/conversation (Safian, 2013) between the university and the regulatory bodies of architects (e.g. chambers and institutes). By constructive we mean a more efficient way to resolve issues like standards of admission in education, standards of admission into profession, the ever growing number of graduates that is more and more difficult to be 'absorbed into conventional architectural roles' of the industry, just to name a few. A possible fix for these issues that could result from chatter is(are) the profile(s) of the architecture student. Thi(e)s(e) profile(s) should be established based on the needs of the profession as a response to the changes in society and should be (a) dynamic profile(s). This approach should be reinforced by the development of research themes in collaboration with the professional sector.

In our process of inventory and classification of Europe's architecture schools we found that there are schools not/poorly represented on the web. We think that being present on the web in an age of maximum student mobility is a sine qua non condition for any architecture school. We think that in a time of extreme student mobility schools should be more concerned with their international perspective and with the international accreditation of their programmes.

Some of the schools spaces will be influenced as well by what we called code in our methodology. The new Virtual Knowledge Centers will change the meaning of the library; podcasts of classes and lectures, online examinations, the new digital ways of project defense etc. threaten the meaning of the classroom and, as Weiner (2005) sees it, even the model of the studio. 'The Studio in an Age of Distraction' is threatened not only as a physical space but as a pedagogical instrument as well, because a 'studio depends on a lack of distraction.' Finally the new wave of computational design and computer aided manufacturing processes studios/institutes show us a different way to look at technology. This way is regarded in most schools with a certain reticence and questioning on what impact it might have on the status of architecture. Rather, the focus needs to be on integration, which is the core of design. (Sorvig, 2005)

We believe that for the first time in history architecture is offered the chance to re-take the lead in the industry and everybody else (consultants, contractors, clients and so on) will need to keep up with the pace that architecture could slowly be setting as a standard. If we are smart about this, if we can seize control over the opportunities shown by digital era, we could witness the first associations in our history (associations between practice and

theory, between practice+theory and building process, between architects and engineers/consultants and so on). This can only happen if, as we've already said, we are going to reengineer the relation between practice and theory, if we will be in control of the coevolutionary process. If that happens and they will work seamlessly like hardware and software with the same architecture we might also find out which were the Professor/Tutor versions, if they were coevals with the Architect's major versions and, why not, based on that to find out more about the next major versions.

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