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An exploration into how the culture of quality construction in Switzerland has influenced three generations of architects in initiating and sustaining their design process.

Lighting the blue touch paper, and building well

Christopher Platt and Steven Spier

[...] *conceive the building in the imagination, not on paper but in the mind, thoroughly before touching paper. Let it live there gradually taking more definitive form before committing it to the draughting board. When the thing lives for you start to plan it with tools. Not before* [...] *It is best to cultivate the imagination to construct and complete the building before working on it with T-square and triangle* [...][1]

Frank Lloyd Wright, 1928

Architectural practice has become considerably more complex in the last twenty years, not to mention since the days of Wright. Many more professions are involved in realising a building, and the construction industry has become professionalised in areas such as health and safety, management training and continuing professional development. Procurement methods for buildings are proliferating and roles for all involved changing, especially for the architect. Shorter timescales are common and there is a general consensus that, in the UK at least, there is a serious skills shortage in the industry and a decline in the quality of the building trades. The industry has become both more litigious and more international.

The numerous government reports on the post-war UK building industry have the recurring themes of procurement, relationships among the building professions and industry performance.[2] The most recent, *Constructing the Team* from 1994 ('The Latham Report') and *Rethinking Construction* of 1998 ('The Egan Report') for example, focused on 'the need to integrate the construction process to the benefits of clients', and, 'delivering greater value [...] by focusing attention on the need to meet functional business

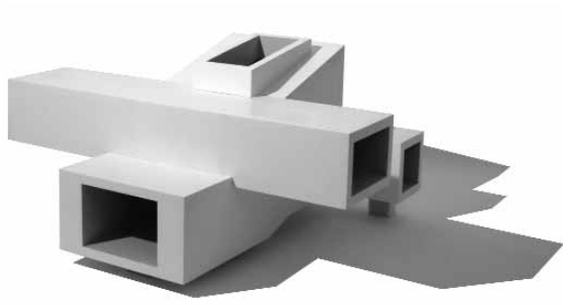


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1 e2a: project and skills-specific staff are needed

2 Partners' key role is to communicate at different levels

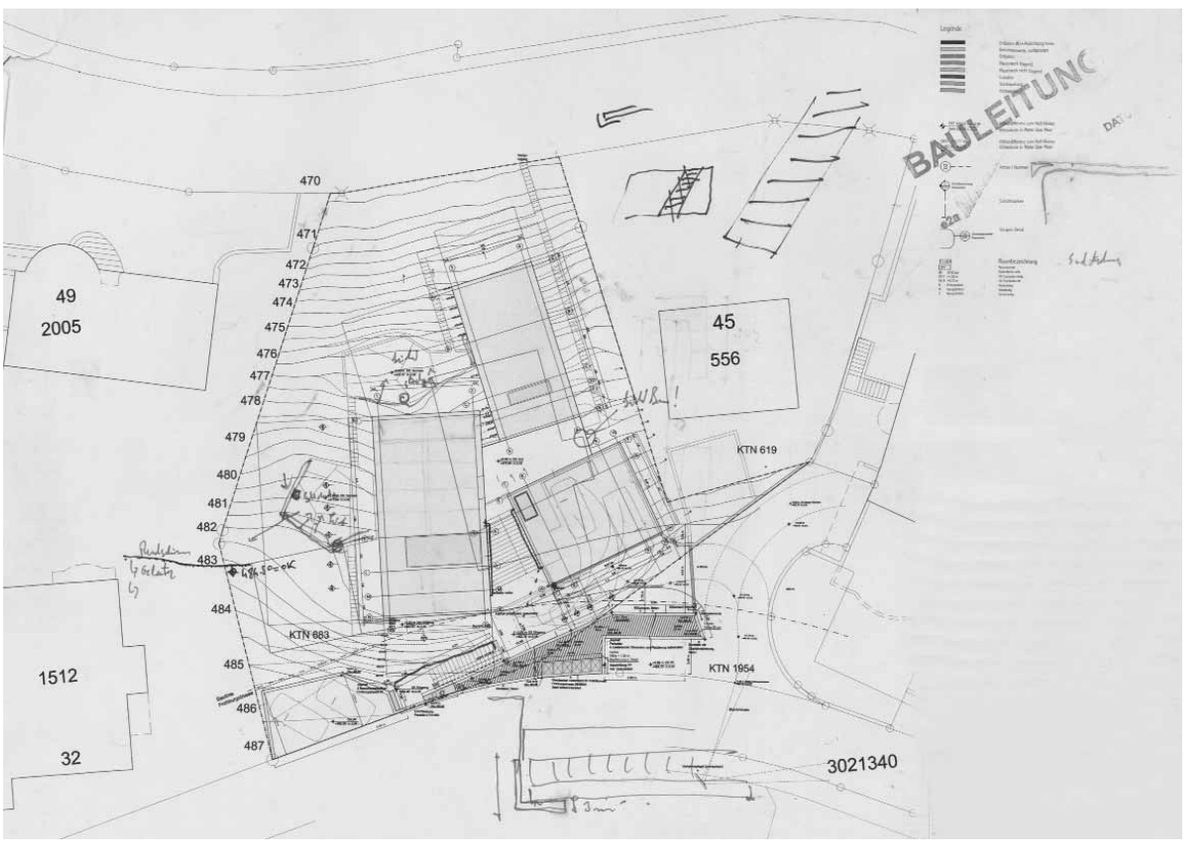
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3 Houses are vehicles to explore architectural narratives and ...

4 ... offer different opportunities due to direct involvement with user and maker



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needs within a tighter budget'.[3] No reports start from the fundamental question, however, of how we can build better buildings and spaces; in short, better architecture. Rather, the major quality criterion in such reports is client satisfaction or industry profit, neither of which necessarily contributes to a better built environment. The issue of quality of architecture is left to government guidelines or advisory bodies.

What constitutes quality in architecture and how it can be measured is a complex theoretical and methodological issue that deserves further study.[4] It might be useful too to look at the issue intuitively, to interrogate an architecture culture such as Switzerland's that has been renowned for decades for the quality of construction (and which is self-evident when you are there). What are the conditions that contribute to the high quality of Swiss building, and more importantly for this paper, what effect does it have on how Swiss architects design? The answer to the first part of that question is more than contractual but heavily cultural.

If creativity, as Toynbee argues, is 'mankind's ultimate asset',[5] then how a creative process is initiated is fundamentally important to understanding that asset. In addressing these issues we chose to interview three different types and generations of practices in German-speaking Switzerland – an important emerging practice, a well-regarded and established one, and a world-class architect – and to focus on how they begin to design. It turns out to be heavily influenced by the structures and relationships within the building industry.

Wallace's (1926)[6] four stages of problem solving still seem germane: (1) preparation; (2) incubation; (3) illumination; and (4) verification. Many notable scientists have even claimed that finding problems is more creative and more important than solving them.[7] What is the stimulus that starts the process that hopefully ends with a completed building? Inspiration, the so-called creative flush, can be caricatured by Mendelsohn's classic sketch of the Einstein Tower, which is assumed to have been drawn at the beginning of the design process. Pregnant with possibilities, it hints that the building has been conceived in awesome totality and somehow contains the building's DNA. It seems to support Wright's advice quoted at the beginning of this

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paper that a period of gestation is required before a creative piece of work is ready to be born and start on its way to realisation, the phase of conscious development towards full maturity.

e2a, Piet Eckert

Intelligent people are those who somehow acquire the skills that lead to their fitting into existing environments.[8]

e2a was established by brothers Wim and Piet Eckert in 2001 and has won a considerable number of competitions, the most prominent to be realised being the Heinrich Böll Foundation, headquarters for the German Green Party, in Berlin in 2008. The office has about thirty employees. For us e2a exemplifies not only a young, ambitious practice but also the opening up of Switzerland, until recently a rather homogeneous and culturally insular country. Piet Eckert was born in Mumbai, studied at the ETH in Zurich and then worked for two years for OMA in Rotterdam, an office which especially then put a great deal of emphasis on conception and little on the art of building. Wim Eckert likewise worked at OMA after graduating from the ETH.

Cultural differences and collaboration

The office has built primarily in Switzerland but also in Germany, which together with their experience at OMA gives them insights into building in different countries. While in Switzerland it is still possible to discuss a detail with a craftsman before it is finalised, Eckert's experience in the Netherlands is that, 'there are no craftsmen left and no more coming'. He claims that an architect there is seldom involved beyond the 1:100 stage. Indeed, within the Netherlands architects often say that the prevalence of high concept architects is in inverse relationship to the quality of construction. Ignorance eventually breeds resignation and then indifference.

The architect in Switzerland, by contrast, has traditionally also been responsible for the construction, working directly with trades on details and quantities. (The architect's fee has traditionally been correspondingly generous by European standards.) It is still common for a contractor (and his subcontractors) to meet the architect to agree the quality and degree of difficulty at the very beginning. This is a genuine exchange that attempts to bring conciliation rather than compromise to the process; a willingness to find common solutions and establish their shared ambition for the project. This structure of cooperation fundamentally influences how e2a designs. 'To learn and then to construct, that's what craftsmanship is ... This is something we actively bring into the design process ... Eventually the guy that builds it is important, because without him we cannot solve the detail.' This close relationship between architect and builder is likewise integral to architectural education at the ETH with its emphasis on producing a technically highly competent all-round practitioner, though he feels this is beginning to change.

Eckert is convinced that the differences between building in Switzerland and the Netherlands are at least as much cultural as contractual. The willingness to invest the necessary time and energy in finding common ground is inherently Swiss. In a recent auditorium project in Switzerland, for example, he condemned the first attempt at a complex *in situ* concrete wall, after which the contractors reviewed the problem, developed new details themselves and rebuilt the wall to the architect's final satisfaction. The initial crisis was turned into a productive relationship, with the contractor in the end being praised for and proud of the quality of the wall. He considers this kind of creative engagement with the makers of the building unique to Switzerland. The practice's experience building the Heinrich Böll Stiftung exposed such cultural differences:

In Switzerland we don't like to fight against each other ... But in Germany you fight ... They are our neighbours but everything works differently in Germany, everything. And so we have to adapt and we have to learn and that's what we try to do ... We learnt to negotiate in Switzerland. In Germany no one negotiates with the German contractor; we just nail things down. In Switzerland we respond to a brief, we develop the details and it's clear. The public relies on the architect. Your competence is not questioned. In Germany you are totally questioned. Basically you are redundant. So this is a different condition.

Agility and openness

The practice's experience in Berlin exposed other fundamental differences in building abroad. For one thing, the budget was approximately a third of that of a similar Swiss building. Initial tenders returned six million Euros over budget. Typically for e2a they solved this by rethinking the architectural strategy rather than the architecture, reconceptualising the building through three key headings: efficiency, effectiveness and sufficiency. Focusing on sufficiency, they persuaded the client to build a *'Werkstatt'* (workshop) rather than a 'nice office building' and so save money without losing architectural character. The result is a rigorous and obvious distinction about where they chose to spend money. Eckert thinks that there is a significant difference between the budgetary and quality constraints in Switzerland that his generation has to deal with and those of the last generation. The days of generous Swiss budgets are perhaps over. If so, that necessitates a different way of designing, with strategic thinking an increasingly important skill of the architect: 'You say creative process, which sounds very nice ... This is not necessarily pleasant ... But you have to learn to anticipate.'

New tools for new situations

The impression Piet Eckert gives is of an architect seeking to retain design quality in a fast-changing professional world, one different from his original expectations but arguably more normal. (His description of using designing houses as an 'ideas lab' is the closest he comes to the notion of authorship described by Zumthor below.) There remains, however, an unquestioned ambition to build well even if the increasingly dynamic and unpredictable process of procurement and

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realisation has left him with neither fixed methods nor an identifiable signature; rather, a needed agility to anticipate where obstacles might lie.

One example is in how e2a structures the work in the office. In much contemporary architectural practice the terminology 'design-stage drawings' and 'production information drawings' (described in the recent past as working drawings) suggests a clear separation in the architectural process between a creative mind at work at the beginning and a technical one later. In many offices, this latter stage will be carried out by different people from those involved in the earlier stage, sometimes even by a different profession, and not uncommonly by offices in different countries altogether. And professionals do naturally develop specialisations and find niches based on their own specific abilities and experiences. Staff at e2a do not necessarily work on a project from its beginning to its realisation.

Instead, they often work on projects only for a specific stage or problem but without becoming narrowly specialised:

> *An architect is on a project and then he's on another project; but he's always with e2a … I want to have this oscillation. If I have a problem with a pitched roof that doesn't want to look like this but to look like this, I cannot leave it to someone who has never built a pitched roof before. I need to have someone with me at that moment who knows such a problem and can get it right [1].*

The mixing of talents and skills is seen as a key resource: 'Now we have a real composition of completely different types of people'. For Eckert the detailing and construction part of a project also 'needs a lot of ideas' and the person working on them is also a designer, 'though a designer with different skills'.

Leadership, communication and the roles of the architect

Sustaining the continuity of conceptual development of a project with a team that is in flux is perhaps one of the brothers' most important roles. It involves mediating, inspiring and briefing staff who join the project at different stages. 'We communicate this … through language, drawings, sketches, corrections' *[2]*. Eckert sees this as a central role, within and outside of the office: 'Architects I think become mediators. You have to sell it a hundred million times. First outside to a client. If you fail in exciting them you have missed the engagement with the project.' This constant probing and pulling apart of a project is such a part of the office's working method that e2a produces two house projects every year for their role as 'prototypes or test laboratories', a fruitful setting for exploring architectural narratives due to the more direct contact with users and makers as well as more relaxed timescales *[3, 4]*. Architectural competitions have been a very successful vehicle for e2A to grow and develop so quickly, even if they have the disadvantage that a design has been developed without any major input from a client. Eckert attributes their success in competitions to their ability to 'make clear what the strategy of the brief is' as a consequence of their skill in working 'simultaneously from a distance and from close up … I don't see the building in its entirety'.

How to retain design quality without sacrificing growth was an explicit issue for e2a at the beginning. The biggest difference between the small-office phase at the beginning and now is, 'the lack of interest in the beauty of the drawing'. Eckert describes how before the general use of the computer considerable time and energy was invested in the production of handcrafted drawings, whether in pen and ink or charcoal or montage. While remembering that period fondly he also describes it as a mixture of self-indulgence and nostalgia. He considers it unhelpful to get attached to specific tools and working methods because then, 'we are not really in discovery mode'. Each project uses different means for its development, but each begins in the same way, with an interrogation, either verbal and/or visual, of 'the real brief' to discover the key constraints:

> *We do it in terms of sparring, me and my brother. We try to elaborate, before we design, what we have to bring as an answer … We like problems. We like to deal with problems in order to find a solution that could kind of magically solve it. The real brief basically says what is important for a project.*

Rethinking priorities

That initial sparring is an important part of their design process. It is a crucial and creative activity that either partner initiates in order to understand, 'What is the work; what is the answer we have to give the client'. But different contexts seem to demand different methods. Eckert acknowledges that there are favourite materials and technologies in the office but the search for a project's most pressing criteria determines that each project is examined on a case-by-case basis. 'If you always end up using the same methodology you become repertoire architects *[5]*. And we try to fight this a lot.' He comfortably invokes the word opportunistic to describe their open-ended approach:

> *I'm trying to say the material itself is not necessarily the driver of a project. Sometimes it's something else and the material will come as a logical consequence. Or sometimes it becomes an extreme driver of it and everything else is not so important. I'm trying to say that we are not following a doctrine, that we are only interested in structure, or only interested in the phenomenological idea about a material, or so on. So we keep that completely*



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open, and we deal with those factors extremely opportunistically.

For suburban projects the first approach must help avoid predictable outcomes since the context is so constraining. For urban projects Eckert describes, generating and 'comparing' references and sketching too. But 'diagrammatic sketching not lyrical sketching' transferred directly to an urban massing model. For instance, in the competition for the Green Party Headquarters in Berlin, the Heinrich Böll Stiftung, their reaction to an aspect of the competition brief that referred to the work of Mies in Berlin while simultaneously demanding in effect an office building on a tight budget prompted a montage of the Seagram Building and the Farnsworth House.

We tried to find an idea, or an approach for this little site … We called this montage the Miesology … because we did not want to think about his architecture … [6] This is a masterpiece. But by composing out of different architectural masterpieces from one architect we found a new tool to develop a strategy for a project with extreme budget constraints.

While the montage helped them to get started, they claim it didn't help them to progress the design further. They had to 'get rid of the collage' and find new ways of interpreting the image in order to develop their proposal. That said, in the resultant building you can discern the logic of the montage, with clear vertical and horizontal masses and the latter functioning almost like the living room and fitted out more representationally *[7]*.



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5 There are favourite materials, but new tools are always sought

6 Green Party Headquarters, Berlin, the 'Miesology' competition montage

7 The finished building



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Bearth & Deplazes Architekten, Andrea Deplazes

You have to construct what you think … This is absolutely what I'm interested in. I want to try things out.

Bearth & Deplazes Architekten was founded in 1988 by Valentin Bearth and Andrea Deplazes in Chur, and now includes a third partner Daniel Ladner *[8]*. Stylistically eclectic, their work can be characterised by an interest in the creative potential of construction to generate architectural ideas. Indeed, Deplazes is professor for architecture and construction at the ETH and the author of the award-winning book, *Constructing Architecture – from Materials to Structures,* a construction textbook that uses architecture as its starting point. Bearth is professor at the *Accademia di Architettura* in Mendrisio, where he is currently the director. Their work has been widely published.

The interest in construction and how that can influence design can be seen in the Meuli House in Fläsch (1997–2001) *[9]*. At a very early stage materials and construction were in effect being considered in an elemental way: 'should it be a heavy building, plastic, or is it very thin?' The house was developed with an insulated masonry construction but 'it had no weight … I knew that something was missing but I couldn't say exactly what'. While attending a site excavation of another project Deplazes observed some foam glass on site and thought of mixing the foam glass with the concrete to act as an insulator, which would mean a building of massive, poured concrete. The technology for doing this did not exist but the office characteristically displayed a willingness to follow an instinct, confident it could translate it into construction. To set a project in motion is, 'to think about what you really want'.

Atmospheres and awareness

Deplazes attributes this openness to his student experience with *Analoge Architektur* at the ETH. This was a movement at the ETH that consciously opposed prescriptive Modernist dogma with the invitation to explore any architecture for ideas but especially the unspectacular and the peripheral. At a school where a central project, after Bernhard Hoesli, was to make Modernism teachable, such an approach clearly had the character of a rebellion. Focusing on atmospheres and experiences rather than a formal architectural language or doctrine, it emphasised moody perspectives and used storyboards to convey narrative. This openness, however, also created the problem of 'how to decide, in making a choice process'. He recalls how this problem found a welcome home in the office of Peter Zumthor, where he and other students worked, at a time when Zumthor was beginning to clarify the direction in which he wished his own work to develop. ('He was dealing with rural influences, *Tendenza* influences, and then we came as students with our *logos* approach and he was absolutely fascinated … because he saw that something was going on.')

Authorship and method

Within the office Deplazes's role is as initiator of the initial concept and editor of its development. Following a period of collating information regarding a client's requirements and the site conditions, he or Bearth will begin sketching rough ideas for a possible design *[10, 11]*. Those rough sketches are then worked up more precisely before the partners involve someone else from the office, who will generally start building a model or drawing it with the computer. Further sketching by the

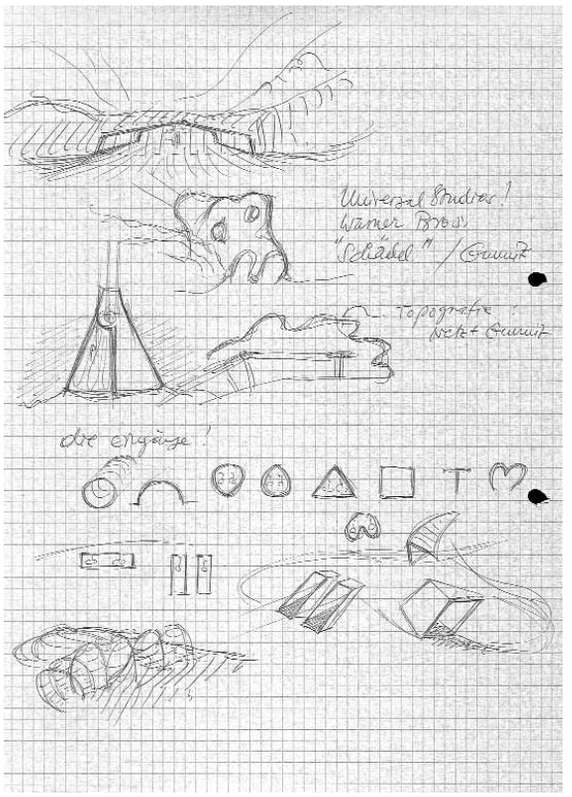


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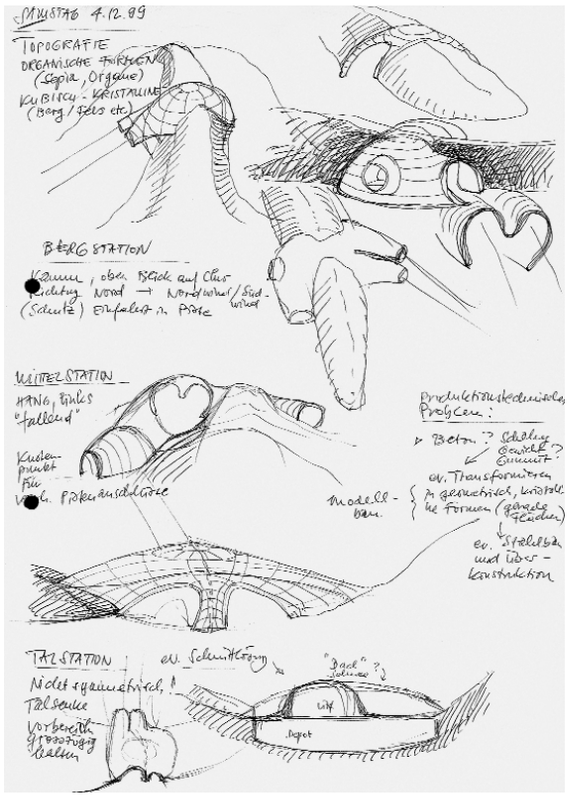


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partners follows until, '... the essence of the conceptual idea is found', though Deplazes denies there is 'a specific methodology that we always use'. While he describes the importance of being open to ideas, he certainly does not invite the office for 'an ideas free-for-all' at the beginning of a project. Put bluntly, 'I'm not interested in trial and error in this sense. For example, give ten people a rough sketch and see what comes out. That we can do in the first year course to push students, but in the office we do not have the time to work like this. And it's not a democratic process.' He only involves others, be it office colleagues or consultants, when he is clear about the project's 'storyboard'. This is important for the project's realisation and is 'the privilege of being the boss'. As he puts it, 'That's the reason I chose to become an architect and not a lawyer ... it's not a democratic process. I do not start with a hearing; bring in the civil engineers, bring in psychologists and whomever and we have a nice party.'

Retaining involvement and authority throughout

In Zumthor's office Deplazes learned to work out details with craftsmen, a process he still employs in his own office. But this has nothing to do with an interest in traditional crafts but in the craftsmanship of building. Therefore, he has naturally become interested in research at the ETH in robotics: 'Why am I interested in robots? Not because I am interested in technologies per se [12, 13]. It is an important thing as an architect, to be part of the process until the building is realised. If you are not you have no control ... I want to be a part of the realisation process until the last thing is done'. Very clearly the goal is to build well but the means to be able to do so are changing. Through his professorship at the ETH



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8 Bearth & Deplazes: design process always initiated by one of the partners

9 Meuli House, Fläsch: construction as generator for architectural ideas

10 Deplazes' initial sketches for Carmenna chairlift station ...

11 ... exploring relationship of form and landscape searching for the 'storyboard'

12 Robotic bricklaying in conjunction with ETH ...

13 ... allowing architect greater control of the realisation process

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Deplazes was also exposed to complex simulation programs where lots of data on a project – from structures to cost – is held together. Such programs allow the consequences of design changes and developments across a number of areas to be explicit during the development process.

14 Meuli House and Winery: final feel as well as final look influenced by late decisions ...

15 ... concerning materials and technology and ...

16 ... how they are exploited

17 An awareness that design criteria can vary from public projects ...

18 ... to domestic projects



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Again, he sees such technology as empowering the architect as the person who is able to manipulate such information. He or she is 'suddenly important in the process'. Such a program in his view is an important tool to assist the creation of this 'complex thing called architecture, hopefully allowing the architect greater control throughout the entire realisation process, a fast-diminishing phenomenon in today's building industry'. Clearly he thinks the link between design and construction is crucial and in his opinion one in which Switzerland is a European leader. As a professor he considers it fundamental to enable students to develop architecture in a 'physical way' and not only 'in the thinking'.



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For someone so interested in the architectural possibilities of construction, so-called working drawings can of course be a phase when there is a moment of discovery, though if then 'you have found out a fundamental problem you have made a fundamental mistake'. Although he denies that anything fundamental in his practice's work gets decided at this stage, the fundamental character of both the house and subsequent winery *[14, 15, 16]*, to name two projects, owes a great debt to late decisions concerning the use of concrete in the house and robotic bricklaying to create the undulating brick panels within a simple concrete frame of the winery. He declares the importance of establishing key construction details to help guide the project: 'Key details are obviously those details that influence everything back to the conceptual idea. If they are not right you have a mess'. These are finalised by the very latest at the specification/tender stage so that they can be priced by a contractor. Nevertheless, he senses when there is something missing in a project without always knowing what. His colleagues joke that he has a 'look in his eye' when he wishes to change things in a project, and he is willing to delay the progress of the project until that missing ingredient is found.

Discovering on the job

The development of the details of the project is done with the input of craftsmen, which is a more accurate word in this instance than the British trades. In his own house a key detail is the rounded, shingle-clad window reveals. First sketches of the house were of a cubic, timber-framed and shingle-clad house but 'it was too hard, too cubic and we wanted to be softer at the edges'. The area in which the house is sited had a craftsman who produced shingles, and early on it was decided to work with him to develop this detail. For Deplazes, 'the shingles coming to the edge provoked a problem that we did not want to solve with a fussy detail driven by overly technical thinking'. Like Eckert he feels that houses generate a different set of design criteria than public buildings. His key criteria for the house in Fläsch are of a different order intellectually and experientially than, say, the criteria for a low energy Regional Headquarters of the ÖKK health-insurer in Landquart (2000–2002) *[17,18]*. In the former, Deplazes was concerned with mass and atmosphere while in the latter with what aspects could be controlled and what aspects the architect had little influence over. Construction is thus 'not only a technical problem, it's more often a cultural question'.

The secret pact between architect and builder

The willingness and expectation of a Swiss architect and Swiss building contractor to engage in developing the detailed design of a project clearly influences the design process and is as much cultural as contractual. This was clear in the firm's experience of building in Germany. Deplazes describes a 'system of trust' in Switzerland between architect and builder due to the shared ambition of wanting to do a good job. He also regards the Swiss tradition of architects costing a project as crucial. In Germany by contrast, he found a 'culture of mistrust', where contracts are drawn up assuming the worst-case scenario rather than as encouragement or protection for a collaborative spirit of endeavour. This fundamentally different



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culture necessitates a different way of designing. For one thing, the lack of opportunity in Germany to discuss problems and solutions with a building contractor means that, 'you have to be absolutely precise with everything before you take the next step ... You have to be really sure about everything, that you really want to have it that way. You have to fix it in advance in a way that nothing then happens on site.' In other words, there is less chance of innovation and no chance of developing solutions over a longer timescale with those who will build the project. 'The DIN culture' (Deutsches Institut für Normung, the German Institute for Standardisation) means that everything must fit that DIN and 'you cannot change it'.

Atelier Zumthor, Peter Zumthor

Peter Zumthor's international renown has been established by a remarkably small group of completed buildings, located mostly in Switzerland and all in German-speaking Europe *[19]*. Each building has an intense though understated presence and is precisely executed formally and in terms of construction, often in one dominant material. Unlike other architects with international reputations, Zumthor keeps a low profile, practises from a modest village outside the cantonal capital of Chur, and carefully controls publicity. Despite the collaboration now of some eighteen assistants he considers himself a sole practitioner. He is also particular about the type and terms of the commissions he accepts, fiercely protecting the way he works, including timescales. Even within Switzerland, he is considered a maverick and by his own admission is uncompromising about how he does things.

Lighting the blue touch paper

On receiving any invitation to design a building Zumthor cites the importance of having an idea right at the beginning. If this doesn't happen he takes it as an omen to decline the commission. 'It has to be there from the beginning otherwise we're not starting. The project has to be alive from the beginning. "Searching around in the fog" doesn't happen.' By idea he means not an intellectual concept but images 'full of atmosphere'. Often they are drawn from his own memories and experiences even if they are not personal but architectural.[9] But what prompts that initial design process is based on two mundane aspects that he considers most important in building architecture:

> *There are no methods and I'm not interested in methods. The initial impulse is always use and place. I work for clients and they want something that has a use. Buildings have a place. So I like to think about the use and the place. What makes the first idea, what makes the first spark; this is always different, you never know.*

Architectural aura

The atelier/house he has recently completed is unusual in that Zumthor was both client and architect, making it a good vehicle for exploring how he designs and the importance of construction *[20, 21]*. His buildings tend to have a reduced palette of primary materials and could be mistaken for being essays in those materials. The atelier/house, for example, is constructed of reinforced concrete and it is easy to imagine that the building was conceived early on that way. Zumthor strongly resists even the description of the house as 'concrete' and also the notion that there is a precise moment when materials are defined.

The concept behind the building as he describes it is more about an elemental feeling than about a specific material: 'This is about a big mineralic kind of idea. A lot of caves. (It could have been stone.) But with different linings.' Pressed to describe the images or atmospheres he was seeking to build, he describes:

> *a spatial feeling ... a composition of inside volumes, completely differently shaped. They would be long and tall, narrow, wide and so on. They would be completely different in their inner linings and character and atmosphere, light quality and so on. And they would be connected to small transitional spaces, a sculptural kind of feeling. Because of the idea, there is something for myself like a glove, like an organism. The first drawings talk about that. It's a feeling about moving through this organism.*

Even more specifically he describes seeking the following atmospheres and programmes already at this first stage:

> *One, intimacy; being in an organism of spaces. Travelling – a sort of having to walk and go through spaces. Some*



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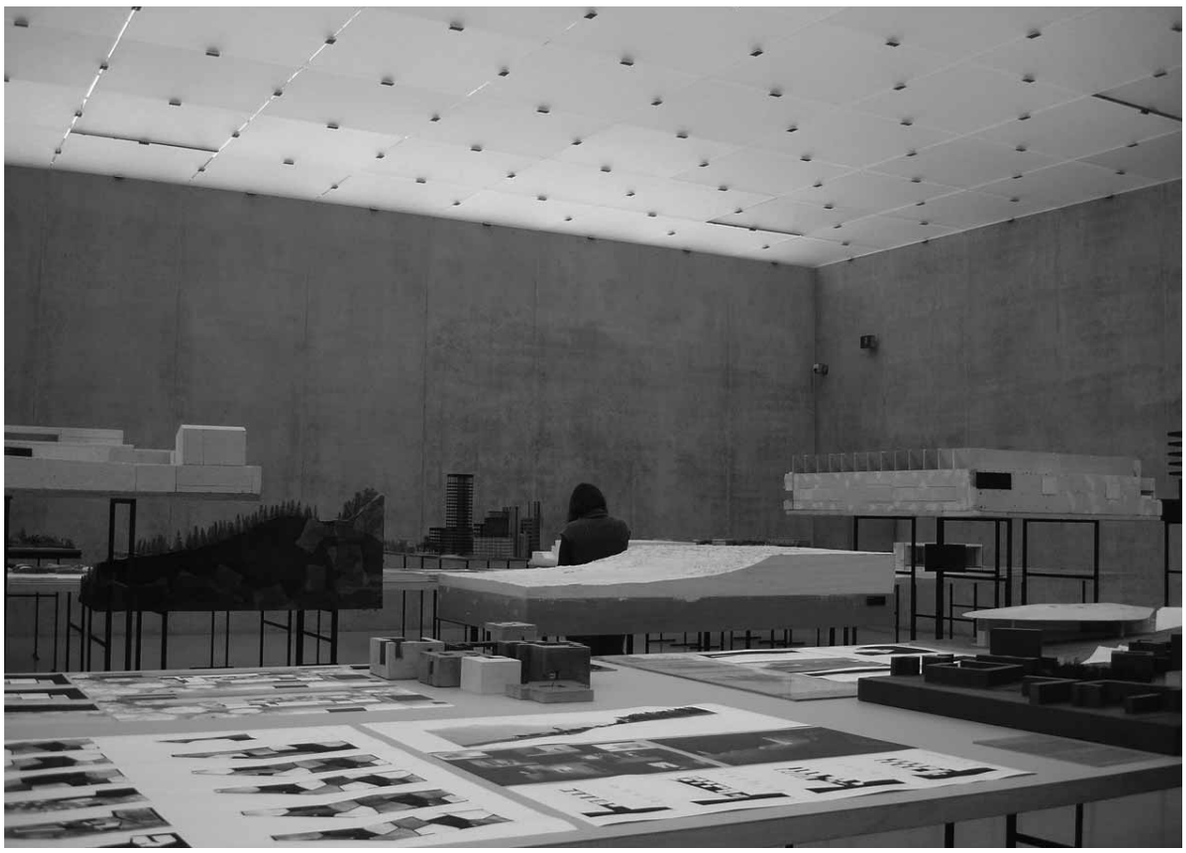
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19 Atelier Zumthor, Kolumba Museum, Cologne: understated presence executed in one dominant material

20 Atelier, House: monolithic structure adjacent to barn-like earlier atelier ...

21 ... displays Zumthor's architectural development in that period

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would have colours, dark wood, light wood, morning sun. One would be a living room, one would be a working room, one would be a kitchen.

Referring to the exhibition of his work then on at the Kunsthaus Bregenz, which he also designed, he refers to the models for the project: 'You saw a set of small models; tiny, concrete blocks. Inside you could see red and blue *[22]*. This is the beginning. It's all there'. One of many memorable aspects of this retrospective exhibition was the fact that all the works exhibited (with the exception of the specially-commissioned film sequences) were drawings and models taken directly from the office. Nothing was specially made for it. The variety and directness of these artefacts contrasted profoundly with the calm perfection of the gallery itself. Zumthor seemed sure that the contrast between all that was unfinished would be completed in some way by the setting of the finished building itself *[23, 24, 25]*.

The personal and the general

What then, is the importance of construction quality and how does one of his projects take material form? Zumthor sees himself as, 'a composer/conductor. I compose my pieces and then rehearse them with all my soloists in the orchestra. My projects are under development until they are finished …' The orchestra includes not only those in the office but those who will build it as well.

In the office he now has some eighteen (generally youthful) assistants and he is clear about how he works with them and in what way he needs their involvement. It sounds like a proper atelier atmosphere:

I cannot have many people. This is the limit I can handle. I go around and talk to these guys or those guys. 'How are you doing? Where are we?' Then we work together for an hour or two or three and talk and look. I don't come with an idea in my head and say, 'I have the solution to the problem'. They have to be willing to help me. They enjoy helping me. I listen to them. I ask them what do you think. They're not just 'pencils'. I ask these guys what they think, this or this or this? And I like to listen to their opinions. Well not so much opinions, maybe feelings or something, reactions, initial emotional reactions. I don't like it like in the university; an intellectual answer, thought-out, a talking head. I'm not interested in this but in initial emotional reactions. Why you react positively or not. This is interesting. The intellectual reasons come afterwards. The intellect is a sharp instrument but it has a limited range. The instinct is huge. I always bring in the ideas, then we talk.

Zumthor has written that his favourite drawings are working drawings, describing them as 'like anatomical drawings'[10] of a building. The relationship between what constitutes 'design drawings' and what constitutes 'working drawings' is a common one in most countries and arguably distinguishes a good design from a good building. Zumthor's architecture suggests that decisions about materials and details continue well into the 'working drawings' phase, extending that creative process as long as is necessary and he resists this descriptive split of 'design drawings' and 'working drawings'. The material development of a project is somehow there in the first images and cannot be neatly separated out from initial design:

Design drawings that refer to a reality which still lies in

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23



24



25

22 Kunsthaus, Bregenz: early study models for house are hollow cubes with coloured interiors

23 Filled with a wide variety of finished and unfinished studies ...

24 ... drawings, models, rough and precise drawings ...

25 ... contrasting with the finished perfection of the Kunsthaus

the future are important in my work. I continue working on my drawings until they reach the delicate point of representation where the prevailing mood I seek emerges, and I stop before inessentials start detracting from its impact. The drawing itself must take on the quality of the sought-for-object ... These sort of drawings enable us to step back, to look, and to learn to understand that which has not yet come into being and which has just started to emerge.[11]

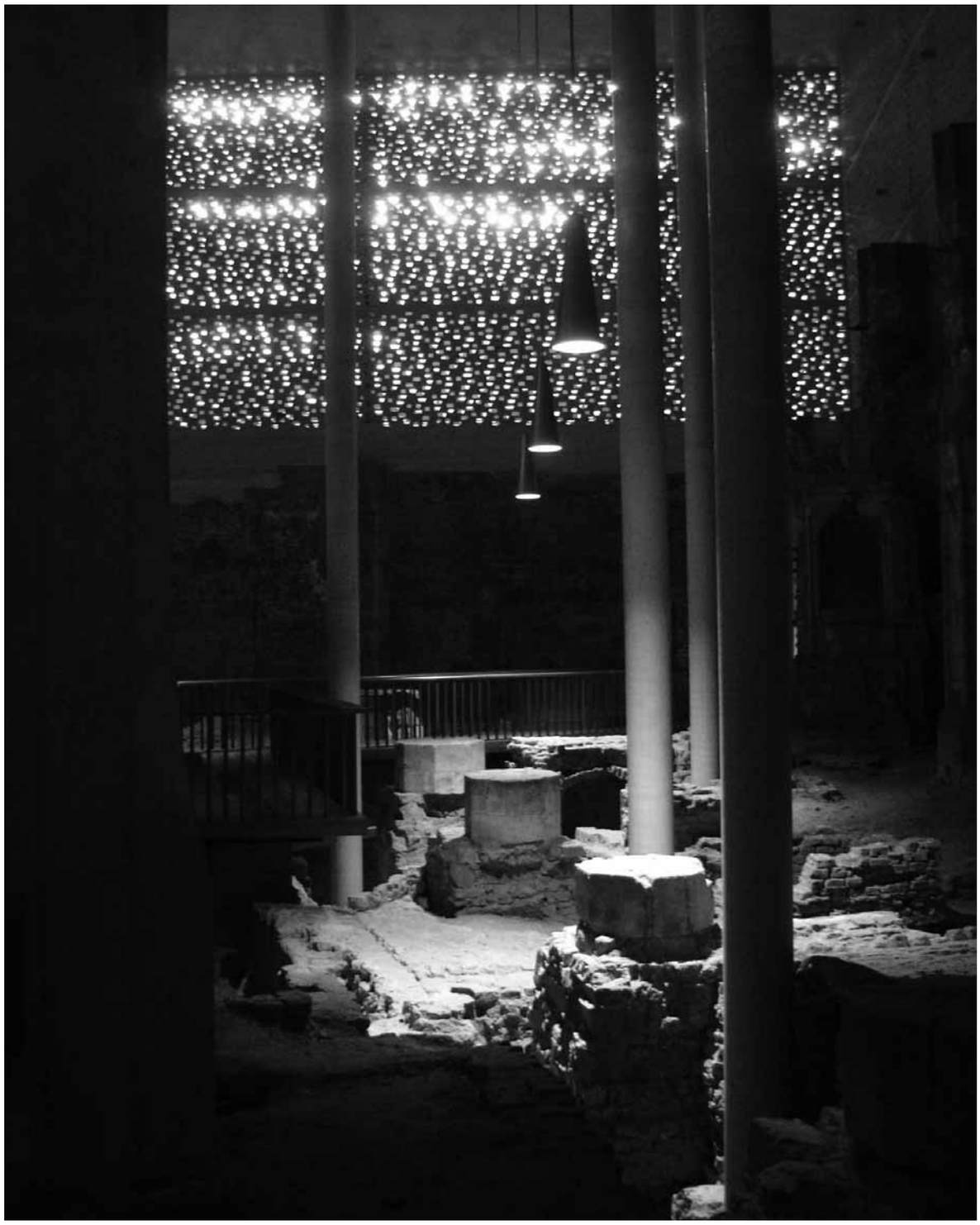
Design development then relates to the entire gestation period of the project, not say the first 25% that the Plan of Work in the UK industry suggests.

The price of quality

Zumthor's stance has significant implications for the later stages of a project when engineering consultants and building contractors are involved and the tensions between the demanding business of coordinating consultants' information and developing the design must be resolved. In his view, people talk a lot about collaboration until things get tough and they lose confidence. Commissioning an architect with such a clear sense of authorship coupled with the resultant lengthy timescales for projects places considerable demands on design teams and particularly on clients. Zumthor considers it crucial that a client firstly knows (and by implication accepts) his way of doing things: 'if this is not the case, it does not work'. He makes a distinction between product and process, 'It's not something you buy in the shop. This we do together of course'. However, despite his emphasis on a certain collaboration and empathy between client and architect, his lack of compromise often results in misunderstanding and tension. He thinks it is sometimes difficult for clients to work with him because he cannot be pressured into making choices he feels are not right. 'Nobody can pressure me. I will pay all the prices [...] Maybe some people respect me, maybe other people think this guy is a little crazy [...] I am very straightforward and direct with them, though always myself.'

Given that he describes his working process as 'artistic production', it is not surprising that not everyone is prepared for what is involved. A similarly high standard of engagement and ambition is expected of the building contractors with whom he works. He carefully investigates which contracting firms are the best and makes the usual site inspections and quality control steps that take place once a project starts on site. But he is also involved in what he refers to as 'compassionate or nursing supervision'. This involves regularly visiting the contractors or subcontractors in their workshops to go over specific drawings and potential problems. This is primarily to anticipate the inevitable problems that crop up when a contractor (having secured the contract) actually realises the high standard of detail and specification that is expected of him. It is also to avoid contractors taking short cuts. However, despite the demands and tensions such an untypical level of involvement from the architect creates, everyone involved is proud of the resulting building and their contribution *[26, 27]*. Zumthor describes drinking beer with the craftsmen at the end of the building phase of the recently-completed Kolumba Museum in Cologne and of how 'they were really sad' that they could not go on working with him now that they understood the level of craftsmanship he was trying to achieve, of how he cared enough to be in their workshop every day. They realised that their work was being appreciated and 'this also gives them a good feeling'.

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26

26 Craftsmen felt involved by the end of the Kolumba project ...

27 ... and regretted the end of working with a master builder like Zumthor

Conclusion

What makes all three architects creative to the degree and in the way we have seen? Are there any common factors among these three very different architects? It is clear that all three aspire to produce architecture of a high quality. Practices with acknowledged design credentials often consciously 'pursue creativity' and use the entire development process as the vehicle to achieve their architecture.[12] More than that, all three offices are supported by specific structures and cultures in Switzerland. They all begin a design with an implicit understanding that they will be involved all the way through the realisation process and can expect an excellent quality of construction. It is obvious that there is a generational shift, with e2a fully accepting that for each project they must be open to learning new approaches with each new situation influencing how they work.

All three interviewees take full responsibility for design leadership and management within their practices. Both Deplazes and Zumthor describe the early stages of designing as an almost intuitive

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27

process, while all describe employing a lively and flexible variety of techniques and tools to start a design. The importance of collaborating with colleagues is also clear in each architect's mind although it varies from practice to practice. Eckert requires project-specific staff who are architects, as does Deplazes. Zumthor, on the other hand, employs relatively inexperienced architects, assistants who can react to his ideas in a particular way. Zumthor and Deplazes prefer to keep people involved from the beginning, while Eckert is content to be opportunistic, moving staff off and on projects as and when their expertise is needed. Perhaps most significantly, all mention in one way or another, the 'pact' that exists between Swiss contractors and Swiss architects to achieve a certain quality, as crucial. They all display an eagerness (and assumption) to engage with the building industry in problem solving as well as project delivery.

There is also a close link between practice and architecture schools and the tradition of a technical education means that architects are good interlocutors for the construction industry. Teresa Amabile observes that the most successful scientists 'often are not the most talented, but the ones who are just compelled by curiosity. They've got to know what the answer is'.[13] She further suggests that hard work, stamina and perseverance are more important

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than raw talent for creativity, but that one does require a 'a supporting social environment'.[14] Certainly Swiss building culture seems to create that environment. Contractors and consultants have an unwritten pact to achieve high standards together and Swiss society accepts a (for Europe) high financial investment in the country's built environment. Perhaps this is what having a craft culture really means. If wisdom 'represents a synthesis of the thesis of intelligence (as traditionally defined) and the antithesis of creativity ...' [15] (Sternberg), then the Swiss building industry could be described as 'wise' in the true sense of the word.

From all three architects there is a confident sense of the architect's role as a distinct and leading professional in the construction process. There is no indication that any of them feel the need to justify their position or profession or that their roles are being usurped or found superfluous in Switzerland. Their rather different experience in Germany suggests the positive effect on quality the Swiss situation allows. It is also a given that in Switzerland the architect is considered a key creative player in the realisation of a building. There were no hints that their clients expected them to be a different kind of professional, i.e. more managerial. All these factors create the climate in which architects practise and influence how they initiate a design. For one thing, there is an expectation that the quality of architecture is valued and therefore exploration and interrogation is a worthwhile and worthy exercise and one that involves the construction industry. This all must contribute to that 'supporting social environment' referred to earlier. According to our findings from these interviews, architecture in Switzerland still sits confidently in both the cultural and the construction industries and the architect is a respected contributor to society.

Whether this will remain so in the foreseeable future is less clear. The consequence for other countries that have already removed the architectural profession (USA, the Netherlands, UK) from the full realisation process and from mediating between users and makers is only too clear to see: a poor level of built infrastructure, a low standard of craftsmanship and a seemingly inextricable skills crisis in the building industry.

Notes

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Interviews

Piet Eckert interview with the authors and Rod Kemsley, Zurich, 22 November 2007.

Andrea Deplazes interview with the authors and Rod Kemsley, Zurich, 23 November 2007.

Peter Zumthor interview with the authors, Haldenstein, 10 December 2007.

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