Training & Employment

n° 120 November-December 2015

How they became eco-friendly architects

The environmental quality of buildings is an opportunity and, at the same time, a challenge for architects. On the one hand, it gives them a chance to make 'sustainability' part of the overall objective of architectural quality; on the other hand, it requires them to acquire new knowledge and competences in a context characterised by economic difficulties and the repositioning of many actors in construction. It is also a challenge for architect training, which has to respond to contemporary issues.

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As an aid to the deliberations of teachers and trainers in architecture, Céreq conducted a survey of architects committed to eco-friendly practices (Box 1). On the basis of their responses, they can indeed be described as 'eco-friendly practitioners'. No fewer than 80% consider sustainable development to be 'a priority' in their professional activity, while 70% think that it has 'strongly influenced their activities and ways of working' and 15% that it has 'changed their practices over time'. These responses are correlated: the more architects prioritise environmental issues, the more they believe they have influenced their practices. These new concerns have had a positive impact on the profession: 60% of them believe that an emphasis on environmental quality offers an opportunity to enhance the status of architects, while 30% of them believe it has forced them to adapt 'while at the same time defending architectural quality'.

Act on environmental quality and not just energy performance

These architects have no intention of confining themselves to efforts to improve energy performance. Seventy per cent believe that energy consumption figures for buildings are misleading, since a building cannot be evaluated in isolation from its environment and the ways it is used. Similarly, 60% believe that headlining energy consumption is reductive, since there are other criteria of environmental quality. In their responses to an open question on their 'hopes and fears for the profession with regard to policies on sustainable development', many of them expressed disquiet about changes implemented in the name of energy efficiency:

'It has to be said that architects have had little say in the legislation governing public policies, which are often reduced to energy issues, which are obviously crucial but reductive when it comes to environmental quality'.

'[...] fear that technology will prevail over functionality and the adoption of simple, common sense solutions of which architects are the guarantors'.

In fact, policies have evolved, and several phases of development can be identified. In the 1970s and 80s, when the public authorities were concerned with controlling energy expenditure in response to the oil price shocks, activist architects, some of them self-builders, were looking for alternative approaches to construction and living. At the beginning of the 1990s, the state supported the development of an approach to environmental quality in construction and then, around 2008, gave priority to reducing energy consumption. This change of direction encouraged construction firms to concentrate on conquering the energy improvement market to the detriment of other dimensions of 'sustainability', such as the

Hygrothermia measures the temperature and humidity level of the ambient atmosphere.

use of locally produced biosourced materials, giving priority to maintenance, repair and re-utilisation, taking account of residents' needs and habits, the development of inter-firm cooperation, etc. While the impact of fossil fuel consumption on climate change makes this a policy for the long term, environmental organisations, architects, sociologists and researches have revealed the limitations of focusing on reducing buildings' energy consumption. At issue here are the standardisation of solutions, the failure to take adequate account of living habits and a reductive view of consumer strategies. The concept of the Anthropocene (the 'human age'), with its warning that the impact of human activities on the planet is running out of control, provides the impetus for more serious questioning of a model in which human society is based on industrial development and economic growth.

However, the successive changes of policy direction did not render the previous approaches obsolete. They were drained of resources and became less visible before resurfacing, as seems to be the case with group or cooperative living initiatives, for example. Despite these developments, the survey reveals that architects continue to be guided in their work by the goal of environmental quality.

Generalists with a good grasp of physics and construction technologies

As far as their disciplinary backgrounds are concerned, it is ecology (environmental policy, urban ecology, ecology of construction) that the architects most frequently cite as one of their strong points (53%). With almost as many (45%) citing it as a strong point, physics (hygrothermia, acoustics, lighting, ventilation) is also one of their particular strengths.

As far as technical knowledge is concerned, they are most likely to identify construction technologies (the use of materials and equipment) as their strong point (72%), together with knowledge of the critical points of environmental quality (52%). These are architects who are well informed about the full range of construction technologies and mindful of buildings' environmental quality. The selection and integration of renewable energies (44 %) and knowledge of thermal regulations and quality labels are less often cited, undoubtedly because of the difficulty of keeping up with the pace of change. Finally, more than one architect in five regards their knowledge of materials databases and of thermal and life cycle analysis software as a weak point. These are emerging areas of knowledge whose constant evolution makes them difficult to follow.

Knowledge of the various disciplines and technical know-how do not constitute competences for practitioners until they are 'incorporated' into their professional practice, to quote Jacques Leplat (cf. Further Reading). Consequently, the survey included questions on the activities they undertook as part of their approach to eco-friendly construction. Of the twelve activities listed, two thirds of respondents were involved in at least four. Some of them, which were frequently cited and in many cases in association with each other, belong to the profession's core activities; they include improvements to the energy performance of both contemporary and old buil-

Box 1 • Methodology and definitions

The survey, which was carried out in May 2015 as part of an agreement with the Ministry of Culture and Communication, was conducted among architects working as project managers (almost 30,000 registered with the Association of Architects). The questionnaire was drawn up following interviews with the directors and lecturers at three architectural schools and then submitted to a team of lecturers and to the Association of Architects. It concerns the specific knowledge and competences deployed in eco-friendly activities and investigates the ways they are acquired before questioning architects on their wishes with regard to initial and continuing training. It is also concerned with the situation of and prospects for agencies with regard to the sustainable development market.

It is was not immediately evident how to set about identifying a population of architects with a strong commitment to 'eco-friendly' practices. In the absence of a 'Recognised Environmental Guarantor' certification, a not very convincing quality label as awarded to construction companies*, the final selection of 400 architects was based on an in-depth study of architectural practices' websites (past records, mission statements and services suggestive of a commitment to sustainable development) and an analysis of the members directories of associations involved in eco-construction.

The socio-demographic characteristics of the hundred or so architects who responded to the survey are fairly representative of those registered with the Association of Architects: 70% men; two dominant age groups: 30-40 year olds (34%) and 40-50 year olds (30%); almost equal shares of self-employed architects and partners. Eighty per cent of the practices employed fewer than 6 architects (full-time equivalents) on the survey date.

* Cf. 'Rénovation énergétique des logements : la piètre performance des professionnels impose une reconstruction du système', UFC-Que choisir – Service des études, May 2014

The complete study report, Les architectes et leur formation au temps du développement durable, *can be accessed on the Céreq website at the following address: http://www.cereq.fr/articles/COP-21/Le-developpement-durable-et-la-formation-des-architectes*

dings, consultancy on environmental quality, designing buildings that surpass the regulations, building site management and monitoring of environmental quality. Others, less frequently cited, include auditing and evaluation, programming and town planning. Many of these activities are emerging fields of expertise involving other professions; consequently, they may still be contested terrain or require specific accreditation.

Respondents were also asked to choose from among six approaches to eco-friendly construction the one that predominated in their work. The most frequent responses pointed to the rootedness of their work in a territory (use of local materials, consideration given to local climate, site characteristics etc.) and to innovations in terms of respecting the local environment and users' needs (heritage, building's functions, occupants' well-being). However, many of them indicated that this was less an approach to architecture than a response to the requirements of specific projects and the opportunities they presented. They emphasised their more iterative, collaborative and participative (i.e. involving final users) approach to project management and therefore looked for partners who were also committed to sustainable development. They often found them among contracting authorities (62%) and research consultancies (58%) and a little less frequently among eco-construction companies and private individuals (46 %); they all wished to strengthen these partnerships. This is evidence of a shift driven by new generations of architects more open to other professions and who regard such partnerships as compensation for a reduction in their professional autonomy. After all, building regulations impose greater constraints on building design and give greater weight to thermal research consultants.

Competences forged by post-qualification upskilling

For many architects, their commitment to the environment found little echo in their initial training and they considered themselves ill prepared to deal with the challenges posed by sustainable development that their generation faces. Some would have liked to be encouraged in their prior commitment, while others wished they had received more training in approaches to environmental quality and bioclimatic architecture. As for the youngest among them, they would have preferred to be better prepared to defend their positions in the era of energy transition.

For those who had qualified before the year 2000, conferences organised in architectural school provided them with resources that were missing from their classes, workshops and placements. The situation has obviously improved, since later generations put their classes and placements in top position by a slight margin. It is nonetheless the case that, for more than half of them, it was their final year work (project or thesis) that enabled them to give concrete expression to their interest in eco-friendly approaches. Regardless of the year in which they qualified (1980 to 2009), their investment in approaches to sustainable development was encouraged more by activities or research carried out alongside their professional practice (study trips, placements abroad, further study) and exchanges between students and teachers than by any contribution made by their initial training.

Continuing training played various roles: catching up (long courses at the national architectural schools), information (regulations, quality labels), advanced classes (software, construction technologies) and exploration of innovative approaches. Over the previous ten years, virtually all the respondents had attended training courses on the development of eco-friendly practices (4 days per year on average). These courses, dealing with a range of different topics, were divided into eight broad areas: design methods, insulation and airtightness technologies, thermal quality labels and environmental quality, energy and ventilation technologies, urban planning and new forms of housing and software and databases. Very few had invested in energy efficiency training for the construction industry, which is geared mainly to project managers, but the new modules announced in 2015 had aroused their interest, since almost 30% of them were considering signing up for them.

The role of training, whether initial or continuing, in architects' professional development has to be put into context, since many other routes to the construction of an eco-friendly profile were mentioned, including foreign assignments, time spent in other offices/agencies, teaching and research, the construction of model eco-buildings and study trips. The role of voluntary associations is also worthy of mention. When respondents were asked which training courses they judged to be the most useful, they frequently mentioned those provided by so-called 'competitiveness clusters' or other voluntary associations run by practitioners or laypeople. Many of the respondents are active members of these associations. They provide opportunities for them to publicise their approaches and their work, to acquire ideas and information, to visit experimental projects and take part in feedback sessions and to establish contacts with other professionals. In addition to the training courses, these associations also put on activities that fit well with their way of

Bioclimatic architecture involves turning the conditions on a site and in its environment to best account in such a way as to minimise the use of compensating technologies

training and educating themselves. Some have entered into partnerships with the national architectural schools.

Expectations of architect training

For three quarters of the respondents, initial training should prepare students better for working with project managers, research consultancies and companies. In order to develop students' capacity to collaborate with these actors, architects believe that new joint educational programmes should be developed with the schools training building engineers or even town planners and building economists. This would also require developing training in the physical sciences and technology. In their view, teaching in sciences and technology for architecture should be strengthened by improving links with the practice of architectural design.

At the same time, they would like to see the further development of approaches to sustainable development specific to architecture. Three quarters of them believe it is necessary to work on the notions of living and architectural quality, to develop the evaluation of energy rehabilitation, to incorporate the energy dimension into preliminary building surveys and to increase the number of case studies of innovative solutions.

Conducting surveys among professionals engaged with contemporary issues – in this case the environmental transition – helps to improve our understanding of their effects on competences and activity. In a period of radical change, there is much to be gained by listening more closely to these professionals. To that end, a number of avenues for further exploration have been proposed (see Box 2); they were presented at the seminar on training for the environmental transition in the national architectural schools, but are equally valid at other levels.

In a rapidly changing world, professionals have to prepare for and construct the future. Forging links between them and forward thinking and planning groups and other forums for exchanges of views, deliberation and initiatives will facilitate the development of training solutions, particularly if these groups are established in training establishments. These solutions could advantageously include the construction of tools and other aids for case studies and the pooling and sharing thereof. Such studies can play an important role in professional development in situations that are complex and evolving. They are experience accelerators and simulators that can train future professionals to structure their approaches.

The survey has revealed how difficult it is for training establishments to react quickly to new challenges, such as those linked to sustainable development. Above and beyond the changes to training programmes suggested by respondents or arising out of the forward thinking initiatives, making available information on the activities and projects organised by voluntary associations can point students in the direction of additional resources. These are organisations that can help students familiarise themselves with professional working environments and develop the generic competences that are increasingly required and are gradually being incorporated into continuing training.

Box 2 • Avenues for further exploration and useful references

- On the theme of forward-looking thinking: 'Future of the profession' groups set up by the Instituts supérieurs des métiers des compagnons du devoir. Contact : Jean-Claude Bellanger – AOCDTF
- On the theme of the construction and sharing of tools and aids for case studies: Centrale de cas et de médias pédagogiques des écoles de commerce (CCMP). Contact : Suzanne Harmel. http://www.ccmp.fr/
- On the theme of identifying associations and their contributions to the environmental transition in the construction industry. Eco-construction associations database. Céreq. Contact : Paul Kalck.
- On the theme of generic competences: 'Portfolio' approach trialled by Jean-Yvon Cabioc'h in the Toulouse Regional Education Authority. Contact : Chantal BURAIS, chantal.burais@ac-toulouse.fr

Further reading

Actes du séminaire pédagogique inter écoles nationales supérieures d'architecture du 26/11/2015 sur 'L'enseignement de la transition écologique dans les ENSA', forthcoming in 2016.

'Normalisation environnementale, dynamiques d'expertise et recomposition du système des professions', L. Cauchard, *SociologieS* [on line], 2015.

'Identifier des compétences génériques pour favoriser l'autonomie des adultes', ICEA, 2015, http://mescompetencesgeneriques.net/wp-content/uploads/2015/03/referentiel-ICEA.pdf

Les architectes et leur formation au temps du développement durable, P. Kalck, Céreq, November 2015, http://www.cereq.fr/articles/COP-21/Le-developpement-durable-et-la-formation-des-architectes.

'Une vision prospective des métiers développée par les professionnels du bâtiment', P. Kalck, Céreq, *Bref*, n° 254 , 2008 , 4 p.

'À propos des compétences incorporées', J. Leplat, *Education permanente,* n°123,1995/2.

'Les sociétés contemporaines à l'épreuve des transitions énergétiques', 2nd International Conference on the Sociology of Energy, Université François Rabelais, Tours, 2015.

'Rénovation énergétique des logements: la piètre performance des professionnels impose une reconstruction du système', UFC-Que choisir – Research Department, May 2014.

T&E n° 120 • November-December 2015

Newsletter on employment and training research from Céreq

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Training - Work - Employment Céreq www.cereq.fr

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MINISTÈRE DE L'ÉDUCATION NATIONALE, DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE
MINISTÈRE DU TRAVAIL, DE L'EMPLOI, DE LA FORMATION PROFESSIONNELLE ET DU DIALOGUE SOCIAL

ISSN 1156 2366
Registration of copyright 1st trimester 2016
Published free of charge