Towards an integrated, searchable research resource

Increasing the accessibility of disciplinary knowledge

Developing architecture's knowledge loop

Thomas Fisher

At a recent appointment, I asked a question that my doctor could not answer, so he swivelled around to the computer in the examination room, typed in a few words, and almost instantly brought up all the literature that he needed to respond to my query. The ease with which my doctor accessed that information raised a question in my own mind about why our discipline has not organised our knowledge as effectively as medicine has done. Why can't we do key word searches and bring up the current research, the most relevant information, and the best ideas and applications in our field for us to assess and build upon? The answer, I think, has to do with our discipline lacking an effective knowledge loop.

As I grew up, I remember hearing the doctors in my family talk excitedly about the recent discoveries they had just read about in their journals; the result of a knowledge loop that the medical fields had perfected over a number of decades. Physicians, encountering unaccountable conditions in patients, work with faculty in the medical schools to pursue research grants in search of answers, which then get reported in the refereed journals that doctors read religiously in order to stay on top of the knowledge in their specialty. The consequences of their not doing so has become crystal clear: medical malpractice lawyers (not a popular profession in my family) stood ready to sue, with the assumption that doctors should know what is in their own literature.

That same assumption has begun to occur with greater frequency in architecture. Log on to the forensic websites in our field and you will see long lists of expert witnesses who do know the literature in their area of specialty and who stand ready to serve not only architects, but also lawyers litigating on behalf of their clients. Malpractice lawsuits partly drove the medical profession to develop its knowledge loop, and the same will eventually force our profession to do so as well.

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This has already begun to happen. In the United States, many of the largest architectural offices participate in a 'Large Firm Round Table', and their partners and principals have consistently identified research as a topic of concern. This stems, in part, from the increasing number of clients who have begun to ask these firms about the evidence they used to back up their design ideas. But it also comes from a recognition by these firms that they need this knowledge in order to defend their decisions in court. Peer-reviewed research becomes not just a good thing to have in its own right, but also a necessary tool in serving clients, meeting the needs of users, and guarding against the ever-present potential of litigation.

Finding consensus

Physicians have a head start in this and we would do well to follow their example. For instance, the medical community holds frequent consensus conferences in which doctors and researchers gather to assess what they know and what they don't know about a given subject as the basis for determining where research is still needed. Such meetings accomplish several things. They bring everyone up to the same level of understanding and raise the overall knowledge and skill of physicians in a particular area. These conferences also unite the profession and research community around a set of questions that need answering, while engaging funders in the discussion and heightening the likelihood that financial support will follow.

Conferences like this might seem far-fetched for our field. In a discipline so focused on personal vision, individual accomplishment and creative expression, it seems unlikely that a sizeable group of architects could ever agree on what we know or don't know about a subject. That may change, though, as clients, armed with far more information than ever before, have become much more demanding of professionals and more sceptical of expert claims not backed up with evidence. Clients may drive us toward consensus, whether we want it or not.

One reason such conferences have not occurred in architecture may have to do with our attachment to general practice. Medicine, of course, has its share of general practitioners. But rather than serve as a filter for referrals to specialists, as happens in medicine, architectural general practitioners mostly work without the aid of architectural specialists. That might make sense for relatively simple projects, but the increased complexity of construction and client organisations suggest that we could use far more specialisation

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than our profession currently supports.

Medical specialties arose in parallel with the greater amount of research-based information available to them, and we may soon see the same happening in architecture. In North America, the Association of Collegiate Schools of Architecture and the American Institute of Architects have had discussions about starting consensus conferences in healthcare and education facilities design, two areas already rich in research findings. Once these conferences begin and the courts start to expect us to attend, they may well become commonplace.

Confronting mortality

Mortality meetings offer another useful model from medicine. Physicians gather to talk about why their patients died, not to place blame, but to share knowledge in an attempt to reduce mortality in the future. Such gatherings seem particularly brave in our litigious societies. This explains why such meetings often happen behind closed doors and without any record of the conversations. But they go to the very heart of what it means to be a professional. What distinguishes professions from other businesses is fundamentally a matter of ethics. Unlike companies aimed at maximising profits for owners or shareholders, professions have a duty to discover and share knowledge in the best interest not only of those whom they serve, but also of the greatest number of people.

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What would mortality meetings mean for architects? What if architects and researchers met to share experiences of why building systems, products, or details failed and to come to a consensus about how to avoid such failures in the future? That would go a long way toward ensuring the better performance of buildings and providing better service to clients, as well as offering some protection to firms facing lawsuits. Such meetings would take a change in attitude within our field. Architecture, long tied to the construction industry, still seems more like a trade that keeps secrets than a profession that shares knowledge. Mortality meetings for architects would require an exchange of information that we rarely see now, and only then among our closest colleagues.

Building the knowledge loop

Consensus conferences and mortality meetings, though, take us only part way toward building the kind of knowledge loop that has served the medical community so well. Such a loop requires several things: interaction between practitioners and researchers about problems encountered in the field, funding sources available to support the search for answers to those problems, and a communications network that distributes findings and gets the necessary information into the hands of practitioners in a convenient way.

We have the potential of creating such a knowledge loop in architecture, but we lack key pieces that need developing and we have breaks in the loop that need repairing. For example, as in medical schools, part-time practitioners and full-time researchers frequently co-exist in architecture schools, although they rarely share information or pursue research jointly in search of answers to frequently encountered problems. If anything, the curriculum in architecture tends to keep these two groups apart, with one mainly teaching studio and the other mainly teaching technology courses.

Nor do we often see the research potential in the classes we do teach. Every school, for instance, has studios that apply existing knowledge to new situations, and yet rarely do we see studios as laboratories generating new knowledge that we should share beyond the reviewers assembled to assess the students' work. Meanwhile, every school has faculty and staff engaged in research, externally funded or not, but rarely do we integrate that work into the studios so that students begin to understand the potential of evidence-based design.

Generating research in our field may be easier than we think. What if, for example, every studio instructor put into each syllabus the requirement that students submit a digital copy of their work along with a short abstract that describes the project, key words to search it by, and the findings to emerge from it? What if the assessment of the students' work served not just to give a grade, but also to provide peer review of the best discoveries for submission to a searchable database? And what if the myriad competitions that the professional organisations conduct required the same from submitters, enabling juries to evaluate not just the best projects, but also the most important knowledge embedded in them for inclusion in the same searchable format?

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Involving the firms

Architectural firms also have great potential as research generators. Given the current global recession, many offices now have more time to assess what they have done in the past and where they want to go in the future. What if, in lieu of paying interns for work that might not exist, firms invited students and faculty to their offices to analyse the work that the practice has done and to gather the best practices and current knowledge from that work for sharing? While many firms might see this as giving away whatever competitive advantage they have, in fact it provides an opportunity to organise what the firm has accomplished and position the office's expertise in a peer-review process that would serve it well once work returns.

Architectural firms could also start seeing interns differently, as potential researchers in the office and as bridges to the research going on in the schools, rather than as cheap labour to build models or check shop drawings. This would certainly take better advantage of students' connections to the schools than under the present situation. Architecture lacks the formal residency programmes and connections to hospitals that medicine offers practising physicians, so we need to develop our own version of that process if we are ever to become a true profession. Architectural offices and the schools would both profit from such a system. For relatively

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little funding, consensus conferences could begin to happen at even a local level, bringing practitioners and researchers together to identify topics in need of further investigation.

Justifying research

These consensus-building processes could also help us to cultivate more research-funding opportunities for architecture. This should not be difficult given the enormous impact that the built environment has on national economies as well as on the global environment. But, again, because of our historic alignment with the construction industry, architecture has an enormous economic and ecological footprint with a relatively small amount of research and development funding. And what research does occur often happens inside the labs of building product manufacturers, which makes the research findings proprietary and keeps them out of the public domain.

How would we begin to develop more public funding for architectural research? That is a question that should be near the top of our field's research agenda. We should do what any group of researchers would do when confronting an issue for which we have no clear answer: conduct a review of what others have done to address the problem, gather data to demonstrate the nature and extent of the problem, evaluate possible solutions to address it, and communicate the peer-reviewed results to as wide a community as possible.

It should not be hard to demonstrate the need for more research in our field. Given the leverage that even a modest increase in spending on buildings can have in terms of increased worker productivity, better energy performance, greater human health, and reduced greenhouse gas emissions, it seems eminently plausible to make convincing arguments for more research funding. We could probably even make a case that this funding will pay for itself in terms of lower expenditures, according to any one of several possible metrics.

Communicating research

Another aspect of our knowledge loop that needs work involves the communication of research findings. A number of searchable databases have emerged in recent years that put peer-reviewed information in the hands of practitioners. We can now search back issues of the *Journal of Architectural Education* and the Association of Collegiate Schools of Architecture's conference proceedings. We can also now search for relevant articles in architectural periodicals through guides like the Avery Index and the Architectural Index, and we can access peer-reviewed articles in journals related to our field through databases such as InformeDesign or the International Architectural Database.

Rarely do these sources of information, however, include the reports that researchers deliver to funding agencies, the innovations that faculty and students develop in studios, or the discoveries that architects make in the course of practice. Too much of the knowledge we have as a discipline remains relatively inaccessible to others, largely unevaluated by peers, and mostly unpublished either in print or electronic form. And we all suffer as a result. We often cannot command the evidence we need to back up our advice to clients or to support our design ideas.

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This points to the need for a much richer range of communication opportunities than we currently have. The journals that many schools now publish could play a much more serious role than most do now, showing not just a sampling of student work from various studios, useful mainly for recruiting prospective students, but also an analysis of what new knowledge each studio and research-based class discovered. At the same time, the brochures that firms publish showing their work as a way of attracting prospective clients could also encapsulate the knowledge acquired in the production of these projects. Sharing such conclusions would not only inform colleagues and build the profession's knowledge base, but would also be likely to impress prospective students and clients more than the slick computer renderings that now pervade these publications.

Finding partners

Conveying the sum of our knowledge in particular areas will also demand that we join forces with allied professions. This, too, will require a change in our professional culture, which tends to guard its turf jealously and ward off intrusions by other closely related fields, leading to ridiculous sibling rivalries such as the current battle between architects and interior designers in the United States over the latter's licensing. If we are to ever grow as a knowledge-based profession, we will need to establish partnerships with the other disciplines responsible for the built environment.

In the United States, that has led to the formation of a National Academy of Environmental Design (www.naedonline.org). Comprising all the disciplines involved in the designed environment, from graphic, industrial, and interior design to architecture, landscape architecture, and planning, this new academy has, as its goal, the promotion, support, and communication of research in the environmental design fields. Its first effort has involved mapping the research expertise in all those fields, in preparation for responding to the needs of the professions as well as those of decision makers in the public policy arena. It also has, as a goal, the transformation of our fields, the building of a research culture, and the creation of an effective knowledge base.

Now that almost everything we do exists in digital form, the construction of such a culture and the creation of such a knowledge base have become more feasible than ever. The harder part may come in changing how we think about what we do, seeing our studios, labs, classrooms and offices not only as sites for creative exploration, but also as settings for the generation, evaluation, organisation and dissemination of knowledge. Medicine made that shift in self-perception a long time ago and we need to do the same ... soon.

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