Interview

Dialogs on Architecture

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Abstract

Dialogs on Architecture is a series of dialogs between researchers and practitioners who are embracing the intellectual model of high technology and are involved in its advancement and application in architecture. The first dialog focuses on the impact of an intellectual model of high technology on architecture, and takes place between Henriette Bier (HB) and Keith Green (KG).

Keywords

high technology, machine age thinking, cyber-physical systems

Dialog #1: The impact of the intellectual model of high technology on architecture

Considering the impact of the second industrial revolution on modernist architecture, the question of how the third and fourth industrial revolutions influenced architectural thinking and practice needs reconsideration.

If the second industrial revolution, which involved inter al. mass production, assembly lines, and electricity, influenced modernism with its Machine Age thinking, transforming buildings into machines for living, the third and the fourth, which involved computation, automation, and cyber-physical systems, implied that the Digital Revolution ended the intellectual model of the Machine Age founded in the mechanical and moved towards a new model of high technology, the question of how this new model influences architecture is the focus of this dialog.

HB: If Le Corbusier acknowledged that architecture was lost in the past, engineers at the time were embracing new technologies and were building simple, effective structures that served their purposes. He noted that the spirit of the Machine Age had begun to produce works that embodied its principles. This implied radically simplified forms according to rational and functional requirements, and mass-produced standardised building components.

I would argue that we are today, again, lost in the past. And while other industries advance the intellectual model of high technology, the building industry is slow to pick up developments, and contemporary architecture remains fundamentally conventional and lacking of innovation. The role of the architect is reduced to a service provider, collaging buildings from various parts designed and produced by other parties.

FIGURE 1 Human-robot collaboration during staking of linear components (© RB).

KG: You're a harsh judge of architecture practice today, but I agree with your assessment, which probably makes us not so welcome to our own kind.

But I would even go so far as to say that architects today are not lost in the past, but simply lost. Being lost is not new to architecture; we were lost (for one) in the later 1980s and early 1990s, caught in the middle of post-modern capriciousness ("Po-Mo"—where a little bit of the past, on the cheap, was skim-coated onto building facades), it's bedfellow "New Urbanism," a new formalism canonised by Philip

Johnson's "deconstructivist" exhibition at MoMA, and strangely, a revival of classical architecture. On top of that, opportunities for architects to build were few in a global recession. But being lost at this earlier time was not without reflection, pondering, and intensive, critical thinking and making; in other words, being lost then was productive for architecture. Lamentably, architecture today no longer embraces this disorientation as a means to propel it; instead, architecture today babbles shards and fragments of the past without any objective or strivings (if, as Rossi and Tafuri argued back then, objective is too strong a word for architecture). There seems to be little at stake for architecture today, apart for gaining notoriety and being cool. Notoriety and being cool isn't bad – architects have long thrived on it – but is that all that's left for us today?

HB: I believe that's not what's left for us today. Advancements in robotics, cyber-physical systems, etc. bring about the opportunity for architects to reinvent themselves. Robotic production empowers architects to become master builders, and robotic operation challenges them to envision buildings as interactive environments. However, architectural practices and the building industry are slow in engaging with these technologies. Considering that automation has been successfully implemented by other industries for decades now, how is it possible that the building industry still adheres not to high but to low technology principles?

KG: Building practices, building construction management, and the organisation of the building construction business are entrenched in the past. There is not sufficient incentive to change. Meanwhile—and here is the good news about architecture today—a small segment of the architectural community is thankfully developing new building materials, new building systems, new ways of building with machines, and embedding new technologies into buildings that make them smarter and more sustainable. But the bridge between these innovations and their implementation in the building industry is a tenuous line seldom crossed. Higher profile architecture commissions can make the journey, bringing their architects notoriety and that cool factor (sought after or gratefully welcomed). Perhaps we have to rely on national and local government building codes to compel the use of such innovations. The future of the planet and the society that inhabits it rely partly on designing and building innovatively. It's paramount.

HB: If the building industry would be willing to apply the intellectual model of high technology, the integration of computation, automation, and cyber-physical systems in design-to-production processes would need to be on their agenda.

KG: Maybe the building industry will not be first in the application of high technology in the design-to-production process. The manufacturers of appliances, industrial machines, and hardware are perhaps better prepared to prefabricate, mass-produce, and mass-customise buildings. It's difficult to think through the extraordinary ramifications of this paradigm shift in the building industry on the built environment, workers, and the business of building, but I think this future trajectory is inevitable. This likely means architects will have to become, far-more so, something other than the cottage industry that we've long been. Designers of a different ilk –industrial designers, interaction designers, and information designers – may be better prepared for the challenge.

HB: What then are the implications of this shift on architectural education?

KG: I think we have architectural education all wrong today. Along with today's architectural practice and the building industry, architectural education is lost, in my judgement. The biggest shortcoming of architectural education is its isolation. Sure, there are a few remarkable efforts by architectural educators to connect architectural education and architectural research within the schools to other disciplines across the campus for the mutual advances of architecture and these other concerns. But overall, architecture seems absurdly stuck in that romantic, atelier-Beaux Arts model: the architecture studio filled with architecture

students overseen by the architecture master. (Once in a while, maybe a collaboration occurs with landscape architecture or, god willing, planning or urban design.) From this, there is little of substance generated that speaks to those potential collaborators from other parts of the academy: scientists and engineers and humanities scholars investigating digital technology, materials, biological systems, the environment, the mind and the body, society, policy. Too many architecture schools continue to cultivate in our young people an architect's propensity for naval gazing and narcissism, and it's not getting too many of us anywhere.

On the topic of training architecture students, I have yet to find an architect that can characterise the objective better then Violet Le Duc, who offered (as a critique of the Beaux Arts) that we should "train their young minds to reason and to become aware of all their deficiencies, instead of exciting their youthful vanity." Architecture schools do a lot today to excite youthful vanity at the neglect of challenging students intellectually, pondering the limitations and opportunities of architecture, expanding the skill set well beyond traditional limits, and expanding students' vision to the vastness of designing a future for this planet which demands that architects work intimately with fellow collaborators from not just the usual trades (that we've commandeered over the centuries) but from so many other disciplines relevant to and prepared for the challenges and opportunities of living today. Around the globe, we have real challenges and real opportunities where architecture can make a difference, but we're only opening the door a little bit to these fantastic possibilities for the future. Opening the door a little bit is perceived to be safe, protective of the way architects do and have long done things, but I think this cowardice or resistance to change may be the death of architecture outside a very narrow band of elite, boutique practices that can persist in the old vocation of architecture. Have we already arrived at this finality?

FIGURE 2 Interactive, portable learning tool for children enhancing personal and computational expression, and particularly, playful storytelling (© Architectural Robotics Lab).

HB: If such resistance to change may be somewhat understandable when it comes to practices, it is unclear why academia, where change is supposed to happen, is resisting. While several academic groups are working on these topics, compared to the resisting majority, they represent a very small percentage that even, after a decade, is still operating as avant-garde.

Considering that responsive architecture had already been introduced by Nicholas Negroponte in the 1960s, as the result of the integration of computing power into the built environment, we look back at a history of more than a half-century. In the 2000s, new works of responsive architecture have emerged such as dECOi's Aegis Hypo-Surface acting as a programmable skin, and NOX's Freshwater Pavilion containing a programmable audio–visual interior. Later, MIT's Kinetic Design Group has been developing intelligent kinetic systems which re-configure to meet changing needs, while the Interactive Architecture Lab at Bartlett has been constructing interactive installations that are integrating robotics, material science, and computational technologies.

In the last decade, robotics have been increasingly employed not only for activating building components but also for producing them. In particular, ETHZ and Bartlett have been active in developing robotic production techniques. Ourselves at TUD and you at Cornell have been also contributing to advancing robotics integrated into building processes and buildings. However, the knowledge transfer from academic environment to industry remains rather slow.

KG: You and I, and the peers you reference, stand outside the current practice and the academy. Why?

On one hand, I think that architectural production still demands, as Vitruvius saw it two thousand plus years ago, that an architect that knows a little bit about a lot of things. Making architecture is complicated, and so it requires wide-ranging competencies. I don't view this cardinal trait of the architect "knowing a little about a lot" as being at all a bad thing; quite the contrary, I think; rather, that it's a marvelous aspiration: the architect as a culivated Renaissance figure. But this character of knowing a little bit about a lot is also against the grain of today's world that requires, increasingly, also, specialisation. And I don't think specialisation—an intensive, singular focus—is the "strong card" of the architect. Moreover, I wonder whether the architect of today is really as cultivated as the architect of just twenty years ago, when architects were maybe poorer financially but richer in thinking and engagement—of the arts, of design, of philosophy and critical thought. With greater professional opportunity (in better economic times) came a diminishing intellectual engagement. Sadly, I don't see students or younger faculty members as interested in a lot of things that the previous generation embraced.

On the other hand, I'm fearful that, in architecture today, we are witnessing a new conformism. Through history, architects have been beholden to the likes of Popes, Kings, Dictators, and Nobles who were able to pay for works of architecture. This is unchanged. But recently, there seems to me an odd twist to these relations: architects (given the opportunity) create singular works to feed the hunger of a few, very empowered people, and the result is a stream of novel additions to the built environment that don't have much more to say to us, or about us, than "look at me." It's a march of the same novelty, which is tiring. In the past, maybe architecture reflected some yearnings of society. Today, we have architecture-as-trophies, awarding their owners for winning (?) the game. The new conformity in architecture is in pleasing the winners with yet another architectural icon materialised to honour their achievement. And the academy is oddly complicit with architectural practice in this tendency. Why? A lack of imagination? An intellectutal fatigue? The seduction of digital means? An addiction to social media?

HB: So where are we – you and I and the others I mentioned – in all this?

KG: Clearly outside. And misunderstood. We are architects who were taught to know a little bit about a lot. We are still curious. And, at the same time, we are specialised. It's no small achievement – to be architects that know a little bit about a lot, to be curious, to be also specialised – but it situates us as a threat to the status quo of the moment, or perhaps it situates us such that we can be ignored by the architectural current—an indomitable force. But I think what our little, loose thread collective is striving for (not discounting others like us that we do not yet know) is forging an inevitable future in which buildings, significant or more solemn, are increasingly the products of manufacturers and design entities and means of production that are not the mainstay of today's architectural practice and the academy.

On perhaps a related subject, the architectural profession continues to be predominately male, despite gains by women in numbers of students entering the schools. Do you think, perhaps, we might find hope for the future of the profession in women leaders? Like so much of the cultural and media world, Architecture is having its #MeToo moment with Richard Meier's disgrace and the circulation of the Shitty Architecture Men list. Do you have a sense that perhaps a new geneariton of female architects can resist the trappings of the architect-client relationship and forge a path to self-growth and architectural exploration? And, finally, what do you envision the small group of cohorts, and others like us, might do to maintain or advance the same. Your final words concerning this glimmer of a prospect might be an optimistic ending to our conversation, at least for now.

HB: When it comes to women leadership and gender balance in academia, there is still room for improvement. For instance, the TU Delft Feminists legitimately complain about the imbalance between student and professor female representation. How a more balanced gender representation would change the profession and how the small group of cohorts, and others like us, might advance it is still unclear; but to quote the TU Delft Feminists it is clear that "We need to learn not to centre whiteness, heterosexuality and masculinity as the default human body and experience, as we now almost universally do. We need to challenge assumptions about superiority based on old, neo-colonial narratives that allowed a few to dominate many. In this way, we can stop reproducing discrimination and oppression of 'others' without even noticing what we are doing. Through education we have an opportunity to transcend binary and essentialist thinking to become infinitely more nuanced and sublime as professionals, and as human beings. We can't design and think effectively about the complexity of the built environment without this richness at heart. Why condemn another generation to standards that don't fit, technologies that won't sustain, and practices that exclude far too many?"

KG: You offer many compelling thoughts and questions here that I embrace and ponder. I look forward to our continuing conversation, which dates back many years. I hope it continues for many years to come.