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Publicly

Architect
Open sourcing has become a defining practice of the digital era. It has radically impacted a wide spectrum of fields, from software production to intellectual rights management, and is starting to infiltrate architectural design and urban planning. As the built environment merges with networks, platforms and advanced fabrication tools, can we realise a contemporary open-source architecture? How will the role of architects and their output change in light of open design practices for the digital age?

This raises further questions such as how to engage with the broader issues of ownership, design, credit and accreditation, and how open-source processes will be fully realised with the introduction of new practice and payment models. A specific tension at the core of the discipline, however, is whether the future occupants of buildings (or anyone else, for that matter), with no professional training, can be confronted with decisions that involve complex structural, regulatory or mechanical knowledge? Can a practice that is predominantly technical be made accessible to laypeople, to the point that their contributions are productive? In short, can an open-source process be effectively implemented in the field of architecture?

User Participation
The short answer is yes – with a caveat. The architectural production chain is a colossal and intricate admixture of different contributions by different people at different phases. Open processes can be integrated at specific points in this chain, according to the skill set, role and purview of any given stakeholder. Digital platforms for overarching project management, as well as systems for soliciting feedback, may make this possible. Even if the architect (a trained expert in building design) makes the majority of the decisions, the future occupants (who have the most intimate knowledge of their needs, requirements and desires) can be productively engaged in different ways. The public can augment – rather than replace – the architect. For example, initial decisions about building programme, schematic design principles, fundraising or post-occupancy evaluation criteria could all be effectively open sourced among various subgroups. Each of these examples is a form of feedback, a way for different stakeholders to express opinions related to the built environment. Yet, perhaps surprisingly, the validity of user opinions is the subject of implicit debate in architecture.

The debate predates modern architectural practice, muddied by ideologies and methodologies. In the worst cases, architects become so concerned with their own authorial intentions that utility is compromised. So ranted Gustave Flaubert in his *Dictionary of Accepted Ideas*, published at the turn of the 20th century: ‘Architects, all idiots; they always forget to put in the stairs.’

Taking a somewhat more measured approach in his 1967 book *Soft Architecture Machines*, Nicholas Negroponte wrote that there is ‘a general feeling that architecture, particularly housing, has been inadequate and unresponsive to the needs and desires of its users … the design of housing is in the wrong hands, that is, in the hands of an outside “professional” rather than that of the resident.’

On the other hand, there are countless failed plans for so-called ‘participatory architecture’. The Oregon Experiment is
a quintessential example: launched in 1970 as a partnership between Christopher Alexander and the University of Oregon, it was a proof-of-concept for democratic planning, bringing together all stakeholders through a universal ‘pattern language’. Yet after several years, the Oregon Experiment had produced little more than poor architecture and widespread apathy. In a later work, Alexander himself revisited the concept of user participation, writing that it was ‘a political and administrative nightmare … No wonder participation by users is so often refused by administrators – in buildings and in towns.’

The undoing of the Oregon Experiment, however, was not user participation itself, but the mechanism for feedback. Stakeholders were invited to tedious planning sessions that were not well publicised, and the original vision of energetic community participation was quickly lost. The only thing Alexander could not protect against was indifference, and at the outset of the project – on a campus that had been buzzing with protests, energy and action during the 1960s – it would not have seemed necessary. In his critique of the Oregon Experiment, Greg Bryant wrote that: ‘The students do not know that they can initiate projects … they are apathetic in part because no one asks them anything.’

Feedback in Design

This is, perhaps, the simple solution. On a basic level, stakeholder contributions can be reactive: if the right questions are asked, simple responses could be a crucial mechanism of open sourcing. This already happens in many markets, where customers ‘vote’ with their purchasing decisions. In automotive design, for example, best-selling product lines are expanded the following year, as a form of indirect reciprocity between designer and customer. Inditex, the world’s largest clothing conglomerate with over a hundred subsidiaries (most famously Zara), has developed a similar model. Clothing is shipped to stores twice a week and, based on immediate consumer buying patterns, the product line is dynamically adjusted. Fast reaction times accelerate the designer-consumer iteration process and speed up the ‘evolution’ of Zara’s catalogue.

This exists nominally in architecture, in the form of post-occupancy feedback and replication of successful projects and features. However, the timescale is protracted – post-occupancy surveys depend on slow questionnaires and observations, and common practice for architects is often to ignore the results. Furthermore, project iteration happens on such an extended timescale that, in most cases, insights have already lost their relevance by the time they are implemented. There may yet be a mechanism for user feedback that augments the role of the architect, as digital tools and platforms are integrated in the architecture production chain from concept to occupancy.

A solution for crowdsourcing direct, natural and unconscious feedback has already been developed in the fields of software and web design. ‘A/B testing’, or ‘split testing’, is a simple tool where two slightly different versions of a webpage or software are shown to similar users at the same time and their responses recorded, collectively indicating the more successful variant. A/B testing has become common practice at several stages of digital design processes. Architecture, of course, poses a knotty set of challenges – logistically, it is impossible to build and test many iterations of a building, and conceptually, spatial experience is more complex than banner ads and menu bars – but these challenges can be overcome. The underlying mechanism of direct user feedback can be a potent generative force for architectural design.

Building on the concept of ‘speculative design’, the broader public can be implicated in project development by responding to designers’ propositional ideas. ‘A/B architecture’ could become an evolutionary design model, sparking public response, consolidating insights, and integrating those insights throughout the process of design. It maintains the central role of trained architects: liability (regarding structural integrity, for example) rests with the accredited professional, as does authorship and financial compensation. The process is nonetheless opened to a broader generative force of crowd participation as small, personal, meaningful insights expand and enrich the design process. Feedback loops become a responsive and immediate ‘digital vernacular’ force.

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Implementation

The question of iteration versus integration remains an important difference between architecture and software. Does feedback influence the design process of a single building, or the iterative development of successive buildings? Feedback loops can happen in two distinct ways, either during the design process or over several generations of built artefacts. The latter – the genealogical improvement of buildings over time – has happened naturally throughout the history of architecture, long before it became a profession. In the accompanying text for the ‘Architecture Without Architects’ exhibition at the Museum of Modern Art (MoMA), New York, in 1964, Bernard Rudofsky wrote: ‘Architecture Without Architects attempts to break down our narrow concepts of the art of building by introducing the unfamiliar world of non-pedigreed architecture. It is so little known that we don’t even have a name for it. For want of a generic label, we shall call it vernacular, anonymous, spontaneous, indigenous, rural, as the case may be.’ This is the process by which regions assume a characteristic style in response to environment, social structures, available materials and historical progression. Dutch architect and theorist N John Habraken described the same phenomenon with the term ‘natural relation’, that is, ‘the age-old settlement process where inhabitation and built form are one’.

Vernacular building has happened throughout the history of architecture – and it will continue to happen – but it is not a potent model for fast-paced responsive feedback.

Digital technologies may shift user input into the design process itself, integrating a wide spectrum of stakeholders along many phases of the production chain of a single building. Virtual reality, for example, erodes the technical barrier to perceiving an unbuilt design. Architectural projects are traditionally developed with specialised drawings and with complex software, but 3D modelling and virtual reality systems will allow anyone to ‘experience’ a building and offer feedback. Responses can be conscious – for example, questionnaires and interviews – or unconscious, evaluating users’ behaviour and physiological reactions as they experience virtual environments. Immersive systems, coupled with large-scale networked platforms, can garner direct input from a large portion of the population, both local and global.

Media can also serve as a powerful tool for obtaining feedback for an A/B architecture process: broad public distribution can generate broad public response. A rich dataset of user feedback will emerge from many and varied participants. Media is crucial in generating excitement and a buzz around design proposals – even today, popular outlets such as exhibitions, demonstrations and social media have the power to draw eyes and opinions from the public. Examples such as Robin Hood Gardens (a 1972 public housing project by Peter and Alison Smithson in Poplar, East London, recently demolished after public protest online) or Zaha Hadid’s proposal for a Tokyo 2020 Olympic Stadium have been radically impacted – even destroyed – by public outcry. In these cases, stakeholders appropriated social media to (digitally) voice their reactions, but in the future proposals may be digitally distributed as virtual reality experiences, and consolidated systems for A/B architecture could systematise responses. Public opinion, today, is often NIMBY (Not In My Backyard) rhetoric, but that feedback could be transformed into positive and constructive design activity.

Carlo Ratti Associati, Future Food District, Milan World Expo, Italy, 2015

above and right: In partnership with supermarket chain COOP Italia, the architects developed an innovative concept for the food shopping experience. As visitors browse aisles of products, simple gestures reveal a wealth of information on a dynamic digital display.
The Case of the Expo

In a recent design project for the 2015 Milan World Expo, the theme of which was ‘Feeding the Planet, Energy for Life’, Carlo Ratti Associati set out to test A/B architecture. The criteria lent themselves to an open, responsive process: the Future Food District had to be propositional, it would be seen by many visitors and covered extensively in the media. Within the broader theme of innovation for the food and grocery experience, the project began with the simple idea that products themselves can tell a story through intuitive customer interactions. The Future Food District is a radical reconfiguration of the grocery store typology. Products are displayed on large tables rather than within a warren of aisles and vertical barriers, and as customers browse, simply touching or pointing to a product reveals a vast trove of information: all of the data associated with a food product, beyond what is printed on the label. Customers make informed decisions as they perceive nutritional properties, production processes or distribution paths.

This conceptual design was developed through a cycle of tests, public feedback and iterations. The final design was manifest as a full-scale demonstration open to the global public. Crucial to the Future Food District are systems for collecting user interaction and behaviour data. Ultimately, over a million people engaged with the pavilion during the Expo, leaving comments and digital traces that were dynamically processed and analysed both to improve visitor experience in real time, and to inform successive iterations or developments of augmented grocery shopping technology.

The idea has been posited to a global public, and it is hoped that others may carry it forward, as a new startup business or retail concept for an existing supermarket chain, as incremental transformations, or as radically new ideas. A near-future startup may bring to market a robotic deli sandwich-maker, or an app that reveals the provenance of food based on gestures. Through public interaction, there now exists a rich dataset of behavioural feedback.

The process of design, operation and iteration for the Future Food District was still far from an ideal A/B architecture framework. But it was nonetheless vibrant and engaged, a potent demonstration that broad participation in digitally enhanced experiences can generate data that can become a feedback loop for architectural design, just as in A/B testing for software. As this is further developed, it could become a model for A/B architecture. While trained architects maintain control of the design process, users function as respondents, ultimately augmenting the architects’ design process, within a project and in the course of successive projects. The end users who stand to reap the most benefit or harm from their own built environment are enmeshed with the architectural production chain, becoming an unprecedented agent for intuitive, relevant, participatory design.

Notes
8. N. John Habraken, personal communication with authors, December 2013.