

Reflections on the History and Future of the Open Building Network

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The Origins of the Open Building Network

An informal international network advocating the implementation of what is now called “open building” has existed since the early days of the SAR (Stichting Architecten Research in Eindhoven, the Netherlands). Housing for the Millions – John Habraken and the SAR (1960-2000), Bosma, van Hoogstraten, Vos, NAIA, Rotterdam, 2000) helps to tell this history. After years of such informal contacts, and after an early attempt (SAR INTERNATIONAL) failed to take root in the mid-1980’s, a formal network was successfully established in 1996, in a meeting in Tokyo, called CIB W104 Open Building Implementation (www.open-building.org). It was formed under the auspices of the CIB - the International Council for Research and Innovation in Building and Construction (www.cibworld.nl). Karel Dekker from the Netherlands and I were invited to be the first joint coordinators. When Mr. Dekker stepped down, Ulpu Tiuri, an architect in Finland took his place, followed by Professors Jia Beisi (University of Hong Kong) and Kazunobu Minami (Shibaura Institute of Technology in Tokyo). Later, Professor Shin Murakami (Sugiyama Jogakuen University) replaced Professor Minami.

Whether members of CIB W104 or not, participants in the world-wide open building network now come from many countries, including the incubators of open building – the Netherlands and Japan, as well as the United States, the United Kingdom, Denmark, Finland, Iran, France, Germany, Italy, Spain, Switzerland, Israel, Russia, Korea, China, the Republic of China (Taiwan), Indonesia, Vietnam, New Zealand, Thailand, India, Mexico, Brazil and South Africa. We are architects and urban designers, economists, constructors, clients, building system developers, policy advisors, researchers in government agencies, teachers, scholars and students.

Purposes

The CIB commission’s original purpose was twofold. First, we would document developments toward open building internationally, and disseminate information about and analysis of these developments. Second, we would convene international conferences at which participants could present papers and projects, exchange information, offer support to local initiatives and recruit new members. These activities focused initially on the methodological and practical aspects of residential open building, the field of activity in which open building had its origins. This stemmed principally from John Habraken’s seminal book Supports: An Alternative to Mass Housing, published in English by the Architectural Press, London in 1972 from the original Dutch edition published in 1961, as well as his later work (www.habraken.com).

Conferences

During the intervening years since the founding of the CIB W104, we have met 19 times. These meetings, hosted and organized by network members and their local supporters, have taken place in Delft, Brighton (UK), Helsinki, Paris, Bilbao, Washington, DC, Boston, Muncie, Indiana (USA), Tokyo, Taipei, Hong Kong, Beijing, Mexico City, and Durban, South Africa. The ETH / CASE in Zurich agreed to host a conference in 2015 on *The Future of Open Building*, and discussions are taking place to meet in Korea in 2017. On occasion, we have met with other CIB Commissions, and members attended some triennial CIB World Congresses.

The most recent conferences have expanded beyond the traditional emphasis on housing to include education for open building, open building-related urban design methods, open building in the design of health care facilities, and the inevitable and important link with sustainability. Three recent conferences included an international student competition, with winners from Korea, China, Germany, the UK, Singapore and the USA who were offered prize money raised by the meetings’ hosts, from generous architecture firms, product manufacturers and clients.

Published Work

Each conference produced published proceedings. These proceedings together contain well over 400 peer-reviewed papers and are stored in the ICONDA®CIBlibrary database (<http://www.irb.fraunhofer.de/CIBlibrary/about.html>). Over the years, special issues of *Open House International* have been dedicated to these papers (<http://www.open-house.org>). A book titled Residential Open Building was published in 2000 (Kendall and Teicher, Spon, 2000). This book, essentially a primer on open building, presents a short history of Open Building, a survey of milestone projects, discussion of methods and products, a discussion of the economics of open building as well as suggestions for the future of Open Building. It has since been translated into Korean, Japanese and Chinese with the latter adding a number of new project profiles. Professor Jia Beisi of the University of Hong Kong assembled the beginnings of an international compendium of case studies (<https://app.box.com/s/irppq5bzjmnleq0rd2zhx6ufveamr2j>). A sizable number of other books, reports and collections of essays have been published on the subject in English, Dutch, Finnish, Korean, Chinese and Japanese, and dozens of technical reports have been produced in several languages. Open building is referred to in countless books, scholarly papers, dissertations, and articles in professional journals. In-depth country reports and studies have emerged in Finland, the Netherlands, China and Japan.

What is Open Building?

Open Building is the term used to indicate a number of different but related ideas about the making of environment, for instance:

- The idea of **distinct levels of intervention** in the built environment, such as those represented by 'support' (or 'base building'), and 'infill' (or 'fit-out'). Urban design and architecture also represent two discrete levels of decision-making.
- The idea that **users / inhabitants may make design decisions** in their sphere of control, as well as professionals;
- The idea that, more generally, **designing is a process with multiple participants** among whom are different kinds of professionals;
- The idea that the **interface between technical systems allows the replacement of one system with another** performing the same function - as with different fit-out systems (e.g. from different suppliers) capable of being installed in a given base building;
- The idea that **built environment is in constant transformation**, and that, as a consequence, change must be recognized;
- The idea that **built environment is the product of an ongoing, never ending design process** in which environment transforms part by part. (www.habraken.org)

Levels of Intervention + Distributed Control + Change

Open building is fundamentally concerned with cultivating the quality of everyday environment. Its methods therefore address distribution of control or responsibility, a key ingredient of a healthy everyday environment. We recognize that built environment is never finished and that no single party does or can control everything over the long arc of history or even in the initial implementation of built environment.

Open building implementation seeks to avoid centralization of control from the top, or, conversely, the chaos that can result from the lack of a well-understood distribution of responsibility from the bottom up. Instead, we recognize a hierarchy of levels in the making of sustainable environment. We recognize this as universally relevant and a matter of great importance to understand and enhance.

Our methods are designed to assure that environmental coherence is possible (in any place and over time), but that at the same time, the small-scale can prosper, not by artifice, but by an authentic locus of control in the intermediate and the smallest units of society. That is the meaning of levels and distributed control: some decisions are appropriately and importantly made at higher levels in respect to sustainable and widely accepted norms and values. Other decisions must be possible at lower levels. Otherwise, rigidity and unsustainable environment results. In this sense,

open building recognizes as unsustainable both integrated, centralized or unified top-down control, and the anarchy of disjointed individual initiative, no matter the politics or economic theory at work.

Open Building and Technology

Open Building is not first of all about technical matters, and is certainly not about large "open," neutral and unobstructed structural skeletons. Since technical systems emerge, are used, and evolve in a kind of ecology of production, directly corresponding with societal structures, open building products and processes are most successful when they are not inventions but cultivations of existing technical and human resources. That said, open building principles serve as important platforms for further development of building practices and products.

Design Methods

To handle the complexity of levels of intervention, distributed control and change, open building practitioners apply particular design methods. These include capacity analysis (also called "test fits") in the design of supports or base buildings; the use of zones and margins as a means of describing the limits of variation in spatial terms; and dimensional and positioning grids to facilitate communication between different parties each responsible for different building elements.

Some Of What We Have Learned

Open Building is Subversive

While it may sound strange, it has been clear for some time that the prosaic shopping center and office building exhibit the characteristics of open building. Little or no theoretical or methodological work preceded their coming of age. Their first appearance and subsequent evolution progressed pragmatically, led by real estate developers and business entities of all kinds. Architects and contractors learned to provide the needed services, often producing work of exceptional quality. Product manufacturers and their supply chains began introducing suitable products, fabrication and construction methods. New standards, regulations and financing tools were developed to match the new realities. These developments are international in scope, crossing economic, political, cultural and technical boundaries.

These ideas may not seem subversive on first glance. But it turns out that open building is contrary to many current assumptions, not only in academic circles, but also more broadly in professional practice and in client organizations. This may be changing, however, with a new generation of practitioners and clients searching for effective methods to handle new realities faced in practice. Open building principles and methods will almost certainly find new applications and interpretations under the pressures of practice.

Residential Open Building

We now see that many parties – public and private - are asking for residential open building – often without using the

term “open building.” Other terms of reference are used such as “Skeleton-Infill” (Japan, China and Taiwan), “Long-Life Housing” (Korea), “Raw Space Housing” (Finland), and “Free Plan Apartments” (Russia). New examples of housing designed by professionals to be incrementally upgraded in an informal user-controlled process come to light constantly, around the world.

A Response to Rigid Functionalism

The adoption of open building is arguably a response to the pressures, conflicts and waste caused by continued adherence to functionalism – that is, the process of defining functions first, often in great detail, and then designing buildings accordingly (the old “form-follows-function” formulation). In a kind of last gasp to retain modernist ideology, “functionalism” has taken on the mantle of scientific objectivity in the current emphasis on “evidence-based design.” Meanwhile, clients seem to be looking for alternatives. In this environment, where decision-deferment without incurring risk, and organizational flexibility in agile corporations is highly valued, open building is providing answers.

Disentanglement

Open building implementation provides a pragmatic answer to a state of technical entanglement in buildings. This entanglement has resulted from the incremental addition, over a long period of time, of new technical systems (primarily pipes, wires and ducts) and their claim by different trades whose choreography and entanglement on the building site has become troublesome, costly and the cause of legal disputes. These pressures are forcing the reconsideration and realignment of procurement and investment practices, accounting methods, construction practices and regulatory systems.

Rebalancing Distribution of Control

In mass-consumer societies, where citizens are often characterized as placated and acquiescent, attitudes toward user control in the making and transformation of environment are changing. Domination by experts (architects and real property advisors included) hired by large corporations, governments and communities, and operating in ignorance of change and the necessity of distributed control, is being questioned. Open building methods exist to help rebalance distribution of control and to assure a place in the decision-making process for users/inhabitants.

Long-Term Asset Value – Link to Sustainability

The idea that real estate investments should offer long-term asset value is reemerging, in both the public and private sectors. This is leading decision makers, in the best cases, to invest in architecture that can endure and yet adjust, rather than becoming prematurely obsolete. This is slowly becoming a matter of course, but only when social and economic pressures demand the replacement of “scrap-and-build” with a “stock-maintenance and reactivation” mentality. These changes in attitude and priorities are now taking the force of law. For example, the Japanese parliament passed legislation in 2008 mandating 200 year

housing. Using technical handbooks developed by Japanese open building experts, local building officials evaluate and approve building projects seeking compliance with the law. Approved projects receive a reduced rate of taxation. Many thousands of units have been built under these new incentives. These and similar developments bring open building squarely into alignment with the sustainability movement.

Residential Open Building is Being Realized Internationally

Hundreds of residential open building projects have been realized around the world and more are built each year. With apologies to architects, builders and clients whose projects are not mentioned here, some of the exemplar projects built in the last few years are the following.

Europe

In a number of European countries, real estate companies are developing open building projects, sometimes in response to local government incentives and competitions, but also simply as responses to the market. These include but are certainly not limited to:

In Finland, where, among others, the SATO development company has built a number of projects, designed by architects Esko Kahri, Ulpu Tiuri and Pia Illonen.

In Switzerland, where a number of projects have been realized including: Wohnpark: Balance in Wallisellen in Zurich and Uster by Andreas Streich; a number of projects by the architecture firm Baumschlager Eberle; the residence and office of Peter Kamm, architect, in Zug, and others.

In The Netherlands, where a number of companies are taking initiative following open building principles, including:

- Product manufacturers (Infill Systems BV, VBI, Slimline Buildings BV, etc.);
- Clients (e.g. Frank Bijdendijk as client for two ‘Solids’ projects, one designed by Dietmar Eberle and another by Tony Fretton Architecture (London), and Lingotto Development’s Multifunk in Amsterdam) and
- Architects (Frans van der Werf, Space&Matter, de Jager & Lette Architecten, Ruimtelab, ANA Architecten, Frantzen Architecten, etc.)

Russia

In Russia, open building is known as the “Free Plan Apartments” (e.g. architect Vladimir Plotkin’s Catamaran project in Moscow is an excellent example). Dozens of these free plan projects have been built in Moscow, St. Petersburg and elsewhere, by many different developers and architects.

United States

In the United States, pioneering residential builder Bensonwood Homes is changing the way US single-family homes are built. They are building in the timber-frame tradition and recently also in their “Unity Homes” projects, employing their unique “OpenBuilt” methods of

disentangling the mechanical systems from the long-lasting and energy efficient structure and enclosure, and enabling free planning of the internal layout.

China

In China, beginning in the 1980's, several pioneering architects and academics began to promote Open Building. These include Professor Bao Jiasheng in Nanjing as well as architects in government ministries including Ma Yun Yu and Zhang Qinnan. Currently, the China Institute of Building Standard Design and Research - a government design institute led by chief architect Liu Dongwei - is working with local developers and product manufacturers to advance Open Building. A number of "skeleton/infill" projects - based in part on Japanese experience - have been built in Beijing and Shanghai, and more are planned.

Japan

In Japan, hundreds of open building projects (now called Skeleton/Infill in Japan) have been realized. Led in the early days by pioneering architects Professor Yositaka Utida at Tokyo University and Professor Kazuo Tatsumi at Kyoto University, several generations of architects and researchers working in private offices, universities and government agencies have been instrumental in making open building in Japan familiar and widespread. The NEXT 21 project, funded by Osaka Gas and built in 1994, continues to be one of the best examples and sets a precedent for a living laboratory for experiments in urban living, including open building, new energy systems and building technology.

Open Building in Developing Economies

From the earliest days of the SAR, interest in open building principles has extended to developing societies. Groundbreaking documentation of incremental housing processes has been conducted in Mexico, India, South Africa and elsewhere. Pioneering projects have been implemented in Mexico and Chile, to name a few. Funded research and teaching inspired by open building is evident in Brazil, Mexico, India, Indonesia and South Africa and in other developing countries. Open Building was a prominent part of the most recent UIA World Congress held in Durban, South Africa.

Related Developments

Reactivation of the Building Stock

Around the world, empty office buildings and abandoned factories and warehouses are being retained for their social and economic value. They are often converted to residential and mixed-use occupancies, after being "gutted" to prepare them for new uses and layouts to be decided later.

Many developers are learning the importance of "setting-up" these assets for continuous transformation, rather than remodeling them only for the immediate functional requirements. In this process, a base building is prepared, retaining and using the existing building as much as possible, while making it ready for changing and varied occupancies.

Open Building in the Healthcare Sector

We also see that in many countries, under the pressure of a rapidly evolving health care sector, healthcare facility clients are moving toward open building. We see this in the United States, Switzerland, Germany, Belgium, the United Kingdom, and the Netherlands. Studies of open building in this sector are taking place in a number of countries, including the United States (for the US Defense Health Agency), the United Kingdom (starting in the 1960's), the Netherlands, South Africa and China. The INO project at the Inselspital Hospital in Bern, Switzerland is a pioneering example, spearheaded by Giorgio Macchi, former Chief Architect of the Canton Bern Office of Properties and Buildings. He and his colleagues succeeded in implementing a strategy called "System-Separation" which pointed the way to achieving high long-term utility value in the public real-property portfolio. This strategy has become a binding policy for the acquisition of public buildings of all kinds, enhancing the sustainability and adaptability of the Canton Bern's real estate portfolio. This policy has led to the implementation of more than 20 projects to date.

Similar developments are undoubtedly happening elsewhere, usually under the radar screen and rarely reported in the conventional architectural press. These developments are happening because healthcare clients are realizing that they can no longer afford to let short-term functional programs drive facilities procurement methods and investment decisions. They are demanding facilities evaluated in part according to their accommodation capacity over time, rather than by short-term functional performance. Significant regulatory and financing barriers remain, and budgeting and decision-making processes designed for less dynamic times are recognized as barriers in reconciling long-term asset value with the uncertainty, social dynamics and evolving practices and technology of healthcare.

Is there a future for an Open Building Network?

Open building is no longer a speculative idea of a few pioneering practitioners and theorists. Therefore, while disseminating information in professional journals, books and scholarly publications about the technical, organizational and methodological dimensions of open building still makes sense, it is time to pose new questions and reenergize old ones.

In the last few years, developments internationally suggest that the CIB W104 commission - and the open building network more generally - stands to benefit from moving outside what some might consider an overly self-referential discourse, expand its arenas of investigation, and continue efforts to engage in dialogue with mainstream architects, researchers, policy makers, clients and educators.

So, the question needs to be asked, is there a future for an international open building network? Or is it the case that what was once speculative is now sufficiently commonplace

that it is no longer a useful or interesting subject for study and development?

My view is that an international network has much to contribute and much to offer its participants. Its activities should continue to cut across stages of country development, culture and economic models.

What I propose for discussion in the following notes is not new, or particularly original, nor is it meant to be exclusive. But three core topics seem to me to be very important in the coming years:

- **DESIGNING THE COMMONS**
- **SUPPORTING INHABITATION**
- **TEACHING and RESEARCH**

Designing the Commons

The “commons” is a term most familiar in studies of the natural environment. Ecologists teach us that stewardship of the commons is critical to our survival as a species and to the fulfillment of both community and individual aspirations.

In terms of the built environment, the “commons” is a manifestation – in built form - of shared aspirations. But the idea of “common” is not found very much in the design fields, perhaps with the exception of urban planning and urban design. That may be because it speaks to more than technical matters and matters of self-expression.

The commons reaches into politics and the decidedly non-technical world of agreements, conventions and values, and the fourth dimension - time. It does not emphasize the “one-off.” Its absence may also be explained by the dominant culture of design today, which stresses what is individual and unique, and how breaking the rules is something to be celebrated. In that culture, sharing anything – finding common ground - is too often scorned. This is profoundly unproductive and is ultimately a self-destructive and exhausting proposition. And it should not have to be repeated that celebrating and cultivating what is common does not go against invention and creativity. The “commons” in environmental design is, therefore, something to be taken seriously.

Several dimensions of “the commons” can be mentioned as deserving continued study and development in practice.

Urban Tissue Design

First is the design of urban tissues, an activity that is fundamentally concerned with “the commons.” Here, the job is shaping public space and the formulation of shared architectural themes, patterns and systems at a level higher than the individual project. The goal of urban tissue design is to enable environmental coherence with variety among multiple interventions over time.

New ways of notating urban design themes is called for; new task distribution and coordination tools are needed and new governmental regulatory and incentive instruments are

needed. Continuity with extant tissues is one very important part of this – wiping the slate clean is not only impossible but is destructive. Establishing new tissue models for “green-field” sites is another equally critical challenge.

Support or Base Building Design

Second, the design of sustainable architectural infrastructure - supports or base buildings or primary systems in open building terms - is fundamentally concerned with what is shared or common. These issues apply to any architectural intervention expected to have a long useful life while its multiple inhabitants and the parts they control continue to change. Here, the questions include:

- **The form and distribution of public (common) space** inside buildings, as a “gated” extension of the urban tissue;
- **Clarifying the distinction in the design of building facades between what is common and what can be individually decided** and changed, an issue rooted both in culture and technology, building performance and energy conservation;
- **The delineation and “marking” of territory** and territorial hierarchies through architectural means, not only electronic security systems;
- **The articulation of service infrastructures** (mechanical, electrical, plumbing), designed to enable the parts of those systems serving (and controlled by) individualized inhabitation to connect to the parts of the more enduring parts of same systems at higher levels.

Capacity vs. Flexibility

We are beginning to understand new architectural criteria, including the idea of capacity. Like in the design of infrastructures of all kinds, capacity has to do with a hierarchy of dependencies. In environmental hierarchies, the higher level sets the stage for lower level interventions, which enjoy certain opportunities that are possible to exploit without disrupting or forcing change to the higher level. We know this instinctively when we move furniture around without disturbing the walls of the room, or when we see buildings come and go in a stable street and public space network.

The Economics of Open Building

Base buildings do not cost more, depending on how accounting is done (and over what time period) and whose interests are served. This was established by sound economic analysis decades ago for the residential sector, most clearly by work done by Karel Dekker and Templemans Platt in the Netherlands, and more recently in the United Kingdom by William Fawcett and his colleagues. Recently, Lingotto, a development company in Amsterdam, built an open building project (Multifunk – ANA Architects). They accepted an initial up-charge of 5% but recouped that investment within two years. The developer was quite happy. This return on investment is evident in the office building and retail sectors, where no investor would consider fixing tenant space before the space is leased or sold.

It is interesting to note that little or no building economics’ evaluations have been done to demonstrate empirically what is already a matter of course – that buildings change. In

fact, in most countries, more money is spent every year on transforming residential properties than is spent on new construction. DIY enthusiasts control a significant % of those expenditures, investing in changes to their own dwellings (including products and services from IKEA, Home Project Centers, etc.). "Professionals" do the rest. In many markets, more architectural contracts (and those of interior designers) go to adapting, renovating and adding to existing buildings than new construction. Occupants often do the work and hire small contractors, which make up the bulk of builders despite the prominence of big companies. This is not unusual. We don't see this walking around (unless we are paying attention) because much of it is inside, or small-scale, and some significant amount is done without official building permits, so it is under the official radar screen.

The amount of construction waste due to these processes going into landfills is also very large and unsustainable.

Part of the problem in documenting this phenomenon is that it is very "granular." Even the constant churn in the office market is not documented. It is simply too "micro" for census takers and other statisticians to account for, added to the fact that the transactions are private and often proprietary and thus hidden from standard statistical data gathering and analysis. Also the categories of data collection are not conducive to this kind of analysis. It is often said that people will not want to customize their dwelling because they fear being unable to sell it later. This is not a compelling argument, given the evidence. In any case, there is the well-known tendency to conform – so "customization" is always done in that social reality.

So while there is much to be done in improving the architectural design and construction of sustainable and energy efficient base buildings, we can reasonably say that these developments are already well on their way, often required by governmental regulations if not general market pressure.

The renewal of the commons should be at the center of the design disciplines

What is shared – including methods, attitudes, and principles – is, as we know but too often fail to celebrate, the basis for a profession or a discipline. Good architectural design methods, suited to the challenges of the times, are fundamental for our professions' continued contributions to the built field – not the one-off project but the everyday environment. Open building principles – levels of intervention; distributed control; change - are part of the search for the commons, but themselves are in need of re-articulation and re-formulation in newly complex and uncertain times.

Supporting Inhabitation

The counterpoint to the commons (at many levels of intervention) is the intermediate organization, the individual or the household. So, while cultivating the commons, breathing life into it, hammering out agreements about it (or simply living with what others decided before we entered

the scene), we ignore individual or intermediate organization aspirations to the peril of the health and vitality of the built environment. We would do well, therefore, to understand and promote all means available by which the individual – the family or other unit of inhabitation – can exercise control, can invest in and help to shape the immediate environment of inhabitation to match its preferences and aspirations.

This means releasing ourselves from the presumption that we can design dwellings, places of work and many other environments, before we know their inhabitants/users. This means developing an understanding of where architectural control serving the commons ends, and where the initiation of control in the service of users begins, whether experts, or by citizens or user groups in do-it-yourself initiatives exercise control.

Is it time for a certified Infill Industry?

The needed support of individual initiative and control can take many forms. One of them includes the cultivation of a distinct, certified infill industry to complement the industry already well on its way in mastering the provision of capacious base buildings. This may already be happening. Research conducted in the United States in the early 1980's, for example, showed that an increasing percentage of value added in the building sector was moving toward investments in equipment and away from construction. Equipment is the classification of products that are depreciated on a short cycle, as opposed to the 30-year depreciation schedule of real property (base buildings). Equipment constitutes the kinds of products governed by standards organizations that oversee consumer-oriented products and services. Similar evidence surely exists elsewhere, but in general this trend is indicative of the increased importance of "infill" or "fit-out" as part of the built environment.

Learning to deliver variety efficiently

The customarily expensive, disjointed and quality-plagued way of renewing existing buildings – built as open building projects or not - is no longer excusable. There are exceptions in the commercial sector, such as the availability of high cost "systems" manufactured and installed by large multi-national companies. These companies are now moving outside of their traditional market niche of premier office space and are investing heavily in the health care sector. Other companies have learned how to deliver just-in-time and fully customized "slab-to-slab" fit-out for branch banks, chain stores, and even branded kindergartens, from central warehouses using locally certified installation crews. Aside from these, current practices produce scheduling complexity, cost overruns, excessive waste and frequent conflict.

In every country, in the highly disaggregated or "fine-grained" residential market, many companies and supply chains operate in the market of serving the user-inhabitant. This constitutes a massive economic reality too little understood as part of the open building story. Some operate with increasing sophistication, supported by advanced design and logistics software. But few companies have made the transition to a fully integrated fit-out "product-service"

whereby they might manage the great diversity of demand in an efficient way. The Matura Infill System in the Netherlands (1985-95) provided an important technical and business model that deserves careful analysis. NEXT-Infill in Japan is finding a market for its fit-out system for the new construction and renovation markets largely in the Tokyo market. It is one of a number of competitive companies offering this renovation service. Most are learning to deliver one-unit-at-a-time fit-out in occupied buildings. Due to the aging of the skilled workers in Japan, some companies are moving toward the training of multi-skilled workers to serve the market demand for infill services in projects involving the acquisition of older multifamily buildings in good locations and their rapid and quiet upgrading.

From an Open Building perspective, these trends signal the growth potential of a coherent and recognized fit-out industry. In this arena, open building knowledge is crucial.

Teaching and Research

A role continues to exist for academics, other researchers and methodologists. As John Habraken has written:

“For the methodologist whose position is inevitably academic, what happens in the field is of fundamental importance. It is our primary source of knowledge: the inescapable reality where habits and conventions make work possible and where new trends of working appear under the pressure of changing technology and evolving demographic and social forces. The observation of this real world invites clarification of what is emerging, raises new questions to be answered, and opens the possibility of generalization and extrapolation that, in turn, must be tested against what is actually happening on the drafting tables, in the management meetings and on the building site.”

This work should encompass not only residential but other ordinary classes of projects where change and distributed responsibility are the norm. Those who teach and conduct research, and students whose job is to develop the habits of life-long learning, will inevitably come face-to-face with the principles of open building in practice, even if the term “open building” is not used. This is evident from the experience of many in the open building network who have reported on their teaching.

Without a doubt, teaching and training methods are fundamental for the development of the skills and attitudes needed for open building implementation in the future. The questions are not discipline specific. They involve decision-making and “task partitioning” (a phrase used by Eric von Hippel at the MIT Sloan School of Management), coordination of distributed design, working on and across levels, making and using constraints, cultivating variety and grappling with environmental transformation. The issues are not only technical, nor limited to skill-building in handling complex architectural form, and are certainly not part of the

conventional discourse dominating academic architectural education.

Teaching Methods for Open Building

How do we teach architecture and planning students from an open building perspective? To make form without first knowing functional requirements; to establish themes that others will use, and follow themes made by others; to work with other design disciplines; and so on? As an architectural educator for 35 years, I have been struck by the apparent paucity of teaching methods employed in support of these necessities, but also realize that, due to prevailing ideologies, we have little opportunity to teach students how to work in an open building way. Part of the reason is that architectural design curricula are already crowded with requirements imposed by accreditation bodies. Part of the reason is, however, that we have collectively been largely absent in reporting on experiments with new teaching methods congruent with the challenges that open building addresses. It is also true that these questions do not appear with any regularity in the mainstream academic discourse, so we find ourselves marching to different drummers than most of our colleagues. As we all know, this can be a lonely, if not dangerous path.

Continuing Education

Perhaps as important as the education of the beginning student is the acquisition of such skills by those already fully immersed in practice. We know that education doesn't stop by the granting of a diploma. Therefore, just as there are continuing education programs in lean construction, sustainability certification, construction and design management, evidence-based design and so on, we must find ways to initiate professional continuing education for architects in the principles and methods of open building.

Thematic Design

Open building defines distinct skills, attitudes and methods needed to make high quality base buildings and lively urban tissues. Open building advocates must take the lead by pointing out these and related developments in architectural education, not as random events but as signs of new beginnings.

A recently released book [Conversations with Form: A Workbook for Students of Architecture](#) (Habraken, Mignucci and Teicher, 2014, Routledge) makes a significant contribution to these questions, and an accompanying website provides a platform for exchange among students, educators and practitioners about thematic design (thematicdesign.org).

Concluding Notes

Asking questions about how built form and people interact - from an open building perspective - is what we have been doing all along. The open building perspective that we share lives in different languages – and different cultures. It also goes unspoken, or uses other words. But in all languages and in many formulations, this perspective remains vital,

interesting and important. The phrase “open building” is not important as such, except to the extent that it offers a shorthand for more complex concepts, to catch people’s attention – a kind of “brand.” Naming a set of concepts is important, but also dangerous – important principles can be overlooked or trivialized by resorting to sound bites. So words count, as does slowing down to read and think.

Practice

Most fundamentally, open building principles address a number of process and control-of-decision-making issues. Changing decision-making patterns is the most difficult thing to accomplish – and open building is fundamentally concerned with who controls what. So, the excellence in which these decision-making principles manifest in architecture and urban design remains in the hands of gifted architects and good clients. We need more talented architects to bring open building skills to their clients, or to work with clients when they take the lead in demanding open building for their projects. As a well-known developer in the Netherlands (Frank Bijvendijk) once said, he wants architects designing projects for him to produce energy efficient, adaptable and loveable buildings.

As practitioners, therefore, our task is to be prepared to bring to our clients the skills, creativity and methods that open building advances in raising the quality and long-term usefulness of everyday environment.

Research

As researchers, our task is to point out where open building is emerging. We need to describe this emergence, clarify it, point out where these realities may be headed and organize research to find out more. As John Habraken has pointed out, the doctor must know the human body to help heal it, but must go beyond that; the lawyer must know the law to help write new laws and adjudicate existing law. Architects must at minimum know the everyday environment – its patterns, systems, types and its transformation – to help make it healthy.

Education

The principles of open building are not academic, but they can and I believe must continue to frame academic studies and to enliven the education of planners, architects, interior architects, product designers, builders, managers and others whose work continues to be employed in cultivating the built field. As educators, our task is therefore to help young and gifted students become comfortable and skillful with – and enjoy – working with the decision-making patterns and design methods that open building recognizes.

The future of an Open Building Network

The issue for the open building network is whether these questions remain central, and are compelling enough, for a decentralized international network to continue to gather periodically to exchange insights into where our explorations have taken us and to share ideas of where to go from here. This exchange has been happening since the early 1960’s and more formally since 1996. For the future, new voices must emerge to lead the engagement with the larger

community of architects, clients and change-agents. This leads to the question of the continuation of the CIB W104 commission. The future of an open building network does not necessarily hinge on the continuation of CIB W104, but the continuation of an international network in some form is important. Perhaps the network will take a different form, with different linkages and tools of communication at its disposal, to lead the discussion into new territory.

The principles of open building do not belong to anybody; they stand on their own. We should celebrate the fact that they thrive in many places, even where people do not know that these same principles are alive and well elsewhere, and note carefully the remarkable buildings and neighborhoods that result from their application.

Our field deeply needs to learn how to stand on the shoulders of the leading lights who preceded us and to reject the absurd notion that every generation must reinvent everything in order to be recognized. We therefore do the right thing when we recognize and build on the many pioneers who articulated these principles and applied them in the first place, and who continue to bring our attention to their significance and meaning.

Stephen Kendall, PhD (MIT ’90)

- Joint Coordinator, CIB W104 Open Building Implementation (1996-2015)
- Emeritus Professor of Architecture, Ball State University
- Infill Systems US LLC / <http://www.infillsystems.com/> / 220 West Durand Street, Philadelphia, PA, 19119 / sk@infillsystems.com

