

Housing One by One

Interuniversity Charrette 2018

The search for industrialized building processes that optimize construction efficiency, accessibility, and mass production has spanned eras, customs, cultures, and public policies. The history of the prefabricated house recounts the confluent and divergent relationship between manufacturing and architecture. Early 20th-century economic crises, social turmoil, and industrial development shaped manufactured dwelling icons: Lustron in the United States, AIROH (Aircraft Industries Research Organisation on Housing) in Great Britain, government-owned and operated precast concrete panel plants in the USSR, and Sekisui Heim M1 by Sekisui chemical in Japan are just a few examples that convey the enduring global pursuit of a factory-produced dwelling.

Customization is at the core of a century of experimentation aimed at reconciling factory production with architecture. As industries sought to mass produce, architects imagined platforms for individualization. These are somewhat conflicting discourses.

Modularity was the platform architects used in order to challenge prefabrication's systemic lack of individualization. Through many experiments, including Walter Gropius's expandable house, the living structures matrix proposed by Ken Isaacs, Walter Segal's self-build housing system, Fritz Haller's mini, midi, and maxi scalable systems, and Kisho Kurokawa's *unit+unit+unit = city*, architects posited an architecture and its individualization shaped by manufactured elements, pieces, parts, blocks, volumes, or prefabricated pods amassed to breed homes or even cities. These were illustrated in countless patterns but perhaps most notably by Japanese metabolists. Kisho Kurokawa tested his simple equation, exploring multiple tessellations for an architecture based on the grouping of completely integrated minimal living pods. Employed for the *Nakagin Capsule Tower* (1970) but also explored for the *Capsule Village* (1972) and the *Concrete Capsule House* (1975), capsules/pods were conceived as complete technological liveable devices to be plugged into a shared infrastructure. The minimal existence manufactured capsule was the basic kernel of an egalitarian and adaptable urbanity. While this potential for mass production inspired some, others sought greater potential for user input, personalization, flexibility, and adaptability. N.J.

Habraken outlined a vision of a collective infrastructure based on industrial production that allowed inhabitants to control and develop individualized dwelling patterns and their construction. Next 21, built in Osaka, Japan, by Kazuo Yatsumi and Mitsuo Takada, is a built manifesto of what Habraken termed a more natural relationship between production and housing.

Today, ecological imperatives, unrestrained suburbanization, and the increasing costs of urbanized land point to an urgent need for affordable urban housing options in Canada to serve an increasingly diverse, informed, and socially conscientious demand. These imperatives, combined with the digital manufacturing revolution, are driving a renaissance in factory-produced housing systems. Will this resurgence finally make manufacturing an integral component of the production and social distribution of dwellings? Experiments such as Didier Faustino's 1 m² house and Alejandro Aravena's Incremental Housing and Participatory Design Manual continue to express two contrasting models for producing mass housing. However, both express a necessity for some type of modularity to underscore and regulate customizable dwelling patterns. Can these ideals of optimized production and complete individualization coexist and direct a new vision for the factory-made house?

Motivated by the intersection of new production and digital fabrication methods and the continued quest for more flexible, adaptable, and accessible dwelling systems, this year's challenge invites proposals to re-examine the potential to unite prefabrication and architecture through an adaptable construction kit. Participants must choose a specific site familiar to them and are encouraged to develop projects that activate unused urban or suburban spaces, creating new density patterns for existing neighbourhoods. Laneway housing, rooftop hacking, backyard studios, and parking lot conversion represent a small sample of possible situations. The objective is to envisage how a basic 1 m x 1 m unit could be informed and deployed to spawn multiple and diverse housing patterns. What would the basic 1 m² kernel of your experimental housing process be? What would it contain? How would it be produced? How could its production be influenced by a holistic design approach that considers a building's complete life cycle, from harvesting raw materials to the building's deconstruction? And how could it inform the serial construction of dwellings and neighbourhoods?