

JUMP BOX

[Dwellings for the Digital Nomad]

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Abstract. Due to the rapid adoption of cellular and web-based communication, modern cultures are less reliant on fixed environments – moving more frequently for work and play. The Jump Box is an investigation into the confluence of these phenomena—the exploration of a technologically sophisticated, customizable environment that enables those engaged in increasingly dynamic lifestyles.

“Modernism was in essence an age of transition. Architecture needs to be well informed and restless, offering advanced personal environments.”

— John Habraken, theoretician and former-head of MIT Architecture (2007).

1. Introduction

The rapid cultural adoption of recent digital technologies—specifically the internet, laptop computers, and satellite communications—has generated dramatic cultural change in the last two decades. As greater numbers of people adopt these evolving technologies (which are becoming smaller and more mobile almost daily) the form of our current dwellings may begin to limit one’s actions because they are: too expensive to purchase, too difficult to alter, non-recyclable, immovable, and lacking in technological integration. As such, it is conceivable that segments of the population adopting mobile technologies will seek living environments that enable greater fluidity in their domestic situations.

In this analysis I will expand upon arguments presented in the book *Digital Nomad*, by authors Makimoto and Manners (1997). Written a decade ago, they asserted that continued adoption of mobile technologies will create

large-scale societal changes—many of which have already come to pass. Here, I propose a possible domestic solution for *digital nomads*—one that relies on open-source standards to encourage the creation of diverse free-market products to create mass-customized dwellings that are more flexible, adaptable, affordable, recyclable, and mobile—a typology I refer to as a Jump Box.

2. Brief Contextual Background

Has our culture become definitively rooted as settlers or might our nomadic past still play a role in our cultural unconscious? The emergence of agricultural technology, introduced a mere 13,000 years ago in Syria (BBC News, 1999), transformed once nomadic cultures into settlement dwellers in a fashion so pervasive that the thought of nomadism is almost heretical today. Yet, we are seeing increased movement among developed cultures in unprecedented numbers—enabled by burgeoning global trade and mobile communication/computation devices.

People in the U.S. are now moving, on average, once every five years (U.S. Census Bureau, 2005, Table 35). In this global shuffle email, blogs, forums, and text messaging are redefining social networks that were once circumscribed by geographic proximity. With global population growth currently projected to swell from 6.6 to 8 billion by 2025 (Population Reference Bureau, 2006), urban areas will gain eighteen times more rapidly than rural ones and sixty percent of the population are projected to live in urban areas by 2030 (UN-HABITAT, 2004/05). Yet, city dwelling has already become unaffordable for many.

Mobile communication and computing devices have lessened the penalty for these moves, but have dwellings responded? There exists a partial solution in the modern RV (Recreational Vehicle). RV ownership is currently at an all-time high, with one in twelve vehicle owning households currently possessing one (Curtin, R, 2005). However, the RV is a dwelling best suited for rural environments and unwelcome (if not prohibited) from most urban settings. In conjunction with mobile technologies, the RV offers many the increased ability to couple work and pleasure regardless of location—except where they may be most desirable—in cities.

For increasing numbers, RVs have become a beneficial form of temporary or permanent living reinvigorated by wireless voice and data technology, easy financing (complete with second home tax benefits), integration of premium technologies, advanced energy management, integration of green elements (like biodiesel fuel and solar electricity generation) and perhaps most appealingly—“drop-of-the-hat” mobility surrounded by one’s own belongings. With a large number of RV owners

choosing to spend entire seasons renting a spot in an RV park, it is apparent that the RV has become a form of “prefabricated cottage” replacing the camp homes and cabins of their grandparents.

Architects, many interested in the topic of prefabrication, have largely ignored the RV phenomenon—perhaps due to the perception that these are vehicles, not homes. This is a significant omission as these vehicles represent sophisticated technological integration and a form of “prefabrication” that is widely accepted within the American culture—an acceptance that the non-mobile manufactured home industry struggles with even today. Despite the negative impressions many architects have of this industry, the RV typology is widely accepted and accommodating of a more fluid technologically integrated lifestyle. If only for these reasons alone (and there are others, as well) the RV typology deserves closer study especially as this typology might offer tangible benefits in an urban context.

3. Machines for Living

Homes have not become *machines for living* as Corbusier suggested (1923). Rather, they have become *places to keep* our machines for living. Today, the machines most desired are the ones which enable our lives in simplistic ways with powerful—and increasingly predictive—interfaces, a concept Malcolm McCullough thoughtfully explores in *Digital Ground* (2004). Such devices perform their tasks with minimal directed attention, and often do so transparently. This concept of transparent efficacy has been dubbed by the Japanese designer Naoto Fukasawa, as *design dissolving in behavior* (NTT ICC, 2001). Examples include devices like the EZPass toll system, keyless locks, automatic faucets and toilets, and lights that dim when not needed.

People wish to be seamlessly enabled by products—including living environments—not inconvenienced by them. The standard house of the last century once kept pace with technological developments, offering electricity, indoor plumbing, central heating, and most recently, cooling. However, with the rapid pace of recent developments, the standard house is failing to keep up on many accounts from keyed locks, manually operated light switches/blinds/windows, water that needs to be mixed to desired temperatures, waste that requires sorting, and a whole host of other accepted, but ultimately archaic features.

By comparison, due to the advantages of mass production and shorter product life-cycles, automotive design has done a much better job at keeping current. Offering both desirable and predictive amenities like onboard hands-free cellular service, audio systems that integrate one’s iPod, auto-dimming headlights/rear view mirrors, GPS systems, anti-lock braking, bumper sensors, and much more. One aspect worth noting in the automotive industry

is that people are less interested in the *process* of creating a car, than they are in *configuring* the features they desire. (By comparison, working with an architect today is a process-intensive activity defined mostly by ambiguity and patience.)

RVs are incorporating many automotive technologies, but as yet, do little to advance predictive domestic technologies. Perhaps this is due to the fact that fixed real estate often relies upon “location, location, location” to appeal to consumers. If dwellings were more mobile, “features” would assume greater importance, stimulating innovation and increased competitiveness for enabling domestic technologies. A sort of dwelling as a product.

4. Digital Nomads

Those most aggressive in their adoption of digital technologies have already begun to exhibit a form of *digital nomadism*, moving about more freely for both work and play. In a service oriented white-collar society, increasing numbers of people may now work, either partially or primarily, via remote electronic means. Fluidity in physical location has become so prevalent that in May of 2005, the US Postal Service announced a Premium Mail Forwarding service to better enable those with diverse geographic lifestyles to attend to the physical correspondence that they are unable to receive digitally (USPS, 2005).

For those who enjoy the cultural and lifestyle benefits of cities, affordability is becoming a serious limiting factor—especially for large portions of the highly desirable “creative class” comprised of young knowledge-workers, artists, and gays (Florida, 2004). Many urban dwellers, often at the beginning of their wage earning years, may skip about from city to city chasing jobs, affordable living, auspicious weather, and/or propitious dating opportunities. One of the current penalties for this sort of nomadism is that many are unable to build equity, since renting is either the only affordable or available option that suits their fluid lifestyle. RVs represent a possible alternative, but are essentially incapable of integrating into urban environments. Even if they were, they may be stylistically undesirable to many urban dwellers, are difficult to alter, and require an integral engine or another vehicle to tow a trailer.

5. Jump Box—A Dwelling for the Digital Nomad

What may be of interest to the digital nomad is a domestic equivalent to the wondrously small flash memory device known as a “jump drive,” which is light, portable, and durable. If a jump drive can hold one’s *digital* life and be

easily carried about, digital nomads might also desire a dwelling that can hold one's *physical* life and be easily toted about—a *Jump Box*.

What follows is a schematic vision for this new typology of dwelling. As such, I invite additional ideas, as well as criticism by those unconvinced. My intention is to further explore this concept thru collaborative developmental efforts that will include digital design explorations, development of an online configurator, physical studies, and finally, a proof-of-concept full-scale prototype.

To better address the growing desire for more flexible environments, I propose the creation of technologically enabled, customizable structures with interchangeable components. These structures would permit urban, suburban, and rural dwelling, using a variety of standard shipping techniques over land and sea. Picture the union of a shipping container and an RV. Picture an iPod for living—desirable, useful, convenient, and mobile. A vital aspect of this initiative includes stimulating consumer desire through strong branding and positive associations regarding adventure, much like those once evinced by the Wally Byham Caravans for Airstream. If done with proper vision, such a product would reverse some of the stigmatization regarding prefabrication. As such, this product differs from existing solutions—resembling a hybrid between RV, automobile, shipping container, and manufactured dwellings.

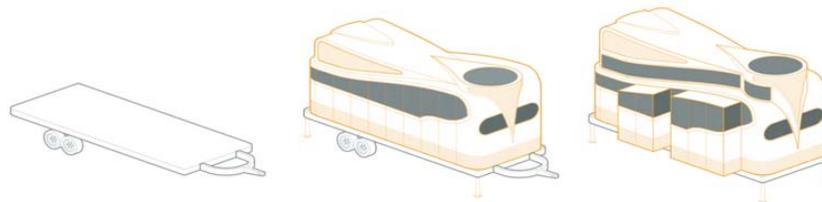


Figure 1: Jump Box Scheme #609, 2006. (Author)

To stimulate a broad range of solutions and enable greater market saturation, the core foundation of this collaborative effort is to create an open-source set of standards for the Jump Box, accessible to any interested manufacturer. This would enable construction of a standardized, durable 100 year chassis that permits almost unlimited solutions to be constructed above. Such a dwelling would encourage *mass-customization* (Pine, 1992), by users, and permit visualization, pre-configuration, and pricing through the use of online configurators. This approach would both accommodate single source solutions by well-branded companies, as well as permit mixing and matching of a variety of components by different designers/vendors. The

intention in this approach is to permit easy upgradability to enable the integration of emerging technologies and evolving consumer desires in the years to come.

I intentionally refer to this object as a *product* as much as a *dwelling*. The components would be the result of current industrial practices involving digital design and digital fabrication, more so than the commonly accepted site-built assembly process for fixed homes. The majority (if not the entirety) of the product is to be recyclable—an increasingly important trend (and in some countries like Germany, a requirement) among industrial products.

Today, with almost one third of the adult U.S. population renting their dwellings, (U.S.HUD, 2001) this new typology also has great potential to increase home ownership for low-income people. This is particularly important considering the average price of a new home in the U.S. is \$290,600 (U.S. Census, Aug, 9, 2006, Facts for Features). One could easily add a Jump Box at the birth of a child—the child’s first home of sorts, something they could take with them when they leave the nest, replacing at least a decade of apartment rentals with minimal “docking fees” as they educate themselves, move about, and develop their careers.

5.1. TYPES

Since the intention is to provide the most flexible dwelling systems possible, envisioning a diverse number of types is crucial—especially as market introduction requires focused efforts. As mentioned above, since the RV market is a very popular platform the Jump Box concept is most likely to initially be well received in this market—especially if it advances the stylistic offerings among RVs and is more technologically enabled.

5.1.1. Rural

Initial models would operate as travel trailers and fifth-wheels—RVs which are tow-able structures without an engine. These models could also easily be utilized as prefabricated dwellings in a variety of locations. Adoption of Jump Boxes that initially parallel the RV typology would gradually increase market share, thus encouraging the leap to urban occupancy to be made more easily, as demand will most certainly be a precursor to supply in the context of the city.

5.1.2. Urban

Since the Jump Box is intended for urban use, the container would easily slip into an unfinished multi-story slot—one that need not be finished, prepped solely with necessary utilities. Depending on the height of the building, solutions to hoisting the Jump Box include portable lifts, integrated lifts (like those used by window washers), or even a large internal freight elevator.

These slots would perform somewhat like docks for boats and could be owned, leased, or even time-shared. A building with common services much like an apartment building would be particularly desirable, only the “apartments” would be removable. Jump Box compatible buildings could even include a mix of standard finished apartments, unfinished slots, and speculative Jump Box modules that could be rented and/or purchased.

Such a scenario would require the participation of real estate developers and require governmental support. Cities should likely endorse such an initiative as it reduces commuter traffic, permits RV tourism, generates increased tax revenue, and offers greater opportunity for an influx of the highly desirable, increasingly mobile “creative class.”

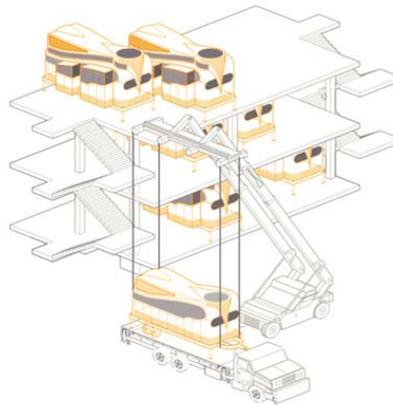


Figure 2: Maison Dom-Inouveau, “What Would Corbu Do?”2006 .(Author)

5.1.3. Suburban

One of the most interesting phenomena that suburban dwellers face is the increasing use of restrictive covenants—especially in newer gated communities. These covenants often prohibit the parking of RVs in driveways. This presents a considerable storage problem, considering the large numbers of RV owners today. It also effectively disables RVs from being used on a daily basis. To address this inconvenience to homeowners, the Jump Box could integrate into the home in a garage, or behind an operable facade. In suburban contexts, a Jump Box could be used as a guest room, “mother-in-law apartment,” or even as a rental unit. This last option may be particularly attractive to those who use their Jump Box only seasonally, and are located in tourist areas, or towns which have a good deal of seasonal living/work (such as college areas and boomtowns).

It is also possible that homes could be built in a Jump Box compatible fashion, wherein the bedrooms would be provided by Jump Boxes. This would be particularly attractive to families without children and empty-

nesters. One could provide a Jump Box for one's offspring when they leave the nest for work or school. A home outfitted in such a fashion would provide an opportunity to give one's children their first equity-generating dwelling long before they move out, without additional cost to a parent when constructing a home.

5.1.4. *Other*

On the outer edges of speculative possibilities, if the Jump Box were to gain acceptance as a typology, any environment which entails domesticity might be re-envisioned to offer integration. Such places include hotels, cross-country trains, berths within cruise ships, and even assisted living facilities. On an even more imaginative front one could make an aquatic package to add to one's Jump Box which would permit them to be used as water-craft or even configured in "houseboat-like" floating communities.

And while we're pushing the boundaries, why not create engines that would permit small detachable urban vehicles to decouple from the larger power plant needed for towing—thus obviating the absurd phenomenon of large Class A motor-homes towing full-sized SUVs behind so people can get groceries. The towing engine remaining behind could serve as a power generator, thus eliminating the need for an additional generator as is done currently.

5.2. STANDARDS

The success of the Jump Box concept relies on the development of rigorous open-source standards available to all. Akin to the bus model of manufacturing in the computer industry (where various components may be swapped in and out of uniform connectors) the chassis is the core component of the Jump Box, while all other components would be configurable. The chassis (much like an automotive frame that carries several body types) is intended to be compatible with the shipping container standards for ships, trains, and trucks. Thus, it will need to perform as a rolling RV chassis, as well as be able to be carried by a variety of transportation techniques.

The second aspect of open source development work is geared toward the creation of dimensional standards above the chassis that will permit universal connectivity for interior and exterior systems. This will permit interchangeability of diverse components. While the Jump Box may expand in a variety of fashions to increase the size while dwelling, when shipped it must fit through the highway keyhole of the interstate system—and may not exceed a maximum of 13'-6" in total shipping height, 8' width, with a length not to exceed 48' to be compatible with all U.S. state limits for the trucking industry.

Mobile products based on such a chassis would allow multiple designers to create products that could easily work together to permit mass-customization in a way portentously touted fifteen years ago by Joseph Pine, author of the groundbreaking book *Mass Customization* (1992). Like the prefabricated living suites by Piikio Works for the cruise ship industry, (Schodek, et. al, 2005) these creations need not look anything like shipping containers. Such a standardized chassis would permit tremendous stylistic diversity, permitting easy upgrades over time as fashions, finances, and technology evolve.

5.3. ECONOMIC BENEFITS

In the US, the economic advantages to owning a Jump Box would be the same as those offered to RVs—that of a second home, where interest payments are deductible from one's gross income. Additional benefits would extend to those in the rental market, comprised primarily of lower income wage earners, students, and those who move frequently or are in the early stages of their working careers. Renters do not build equity, no matter how long they live in one spot, nor are they able to enjoy advantageous tax benefits offered to house-owning Americans. A Jump Box would permit *renters* to live as *owners* in a fashion that would cost the same, or less, than renting while enjoying the same tax benefits afforded to homeowners—and simultaneously create equity.

5.4. BRANDING

According to a recent article by business professor Banwari Mittal, our culture relies heavily upon brand-name products for self-identity (2006). Membership in today's consumer collective is gained through the purchase of celebrated popular products. Oxymoronicly, people assert their "individuality" through their display of mass brands and accessories. This desire for personalization is one that the Jump Box would excel at since components would be easily interchangeable. Thus it is essential to create positive brand identity—an aspect that stick-built homes are beginning to pursue with emerging efforts by Martha Stewart with KB Home (2005) and Philippe Starck with Shaya Boymelgreen to create *Downtown* in Manhattan (Dunlap, 2004).

As Michael Sorkin suggested in his *Harvard Design Magazine* article "Brand Aid," "to create the success of any commercial multiple, the brand is critical. . . . And, of course, celebrity is the main measure of authority in Brandworld." (2003). Thus, architects and designers may gain access to wider markets by branding their efforts for Jump Boxes. Instead of trying to launch a brand from a position of obscurity, architects might associate with

recognized brand names as Michael Graves did in partnering with Lindal Cedar Homes and Target to offer customizable pavilion structures through Target's website (Fig. 3) Alternatively, designers may wish to work somewhat behind the scenes with a known brand, such as the recent work Christopher Deam has done to reinvigorate Airstream.



Figure 3: Pavilions, Michael Graves, Lindal Cedar Homes, Target, 2007 (www.target.com)

5.5. ONLINE CONFIGURATORS

It is possible that architects now operate under the false premise that people *want* to be involved in the creation of their buildings. This participation does not happen with any other product today and may not be as true as architects think. People want “the whole enchilada” and enjoy specifying options as is witnessed with the BMW Mini Cooper website, where people can choose between 10 million different configurations (2006). Online ordering represents a powerful opportunity because of its multilayered ability to tender interaction, option visualization, pricing variations, data linking, non-committal “browsing”, and statistical analysis of items that generate consumer interest—thus providing a beneficial feedback loop for product development. This feedback, even by non-buyers, is of particular use in focusing product lines, as is now being done by Bensonwood Homes with their online building configurator (Walter, 2006). Architects and designers will also enjoy the fact that virtual 3D models are often all that needs to be displayed, reducing diverse and expensive prototype creation.

Consumers using an online configuration process could customize their fantasies in a way that they and the designers find beneficial. Some examples already in place for architecture may be seen in the configurable online ordering systems used by LivingHomes (2007), Marmol Radziner (2007), and a few others.



Figure 4: BMW Mini Cooper Online Configurator, 2007 (www.miniusa.com)

5.6. THE CHALLENGE OF STORAGE

Dr. Yasmine Abbas, researcher of “neo-nomads,” describes the following challenge, “When I pack my things to move, if I’m not ready to throw something out I have to leave it somewhere. I have *stuff* scattered throughout several different continents. Yet I wonder, if I can’t carry it on my back, do I really need it?” (2006). Thus she describes one of the greatest challenges for urban dwellers and those prone to mobility. Space for storage is becoming a defining challenge and may be one of the contributing factors in the increase in home size from 1,500 square feet in 1940 to 2,500 today (Ungers, 2007). This trend has happened despite a decrease in average household size, falling from 3.7 to 2.6 during this same time (U.S. Census Bureau, 2003, HS-12).

The size of one’s living environment controls the amount of “stuff” that can fill it—certainly a limiting problem with RVs and a Jump Box. For this “growing” problem the storage industry provides a solution for as many as one in ten Americans today. With 2.2 billion square feet of storage space in existence, the self-storage movement is growing rapidly. It took twenty-five years to create the first billion square feet of self-storage—the second billion took only eight (Self Storage Association, 2007).

The storage industry currently offers room-sized lockers that people individually rent and fill. In a Jump Box there is no reason why infrequently used, or seasonal items could not be stored off-site. Envisioned is a system much like that used commonly in the warehousing industry where coding and automatic storage and retrieval of standardized containers is prevalent. Standardized containers would pop in and out of Jump Boxes and be easily sent away to, or retrieved from, remote locations by a shipping service like UPS, DHL, or Fedex. This process would utilize a simple online retrieval system and one would never have to visit their storage location(s). The

storage industry would likely favor this since it could charge by the size and number of containers stored, and it would permit dense remote storage without the need for the public to ever interact with it.

6. Shortcomings, Criticisms, and Hurdles

As with any proposal that explores change, there will be numerous objections and criticism of the ideas put forth here—after all, the nature of “the home” is among the most deeply seated in our cultures. I, too, was once highly skeptical of mobility, but after direct experience with RVs four years ago, I began to explore trends in mobility and manufacturing to satisfy my curiosity. To my initial dismay, these discoveries began to argue persuasively in favor of mobility. However, the more I learned, the less I asked “Why?” and the more I asked “Why not?”.

I suspect that resistance will be felt primarily by governmental agencies and existing industries that are dependent upon fixed settlement patterns for both profit and taxation. However, the continued and increasing success of the RV suggests that evolutionary change could gradually occur in these institutions as consumer demand increases and fears subside—especially true as new business opportunities emerge. After all, who would have ever predicted the once stodgy banking industry now embracing online banking?

Will Jump Boxes replace traditional homes? No. This is rather unlikely and is not the intention of this proposal. Rather, what is suggested is that dwellings become more responsive than they currently are to technological and cultural evolution. The biggest hurdle to clear is the same one that has caused numerous other attempts at prefabrication to fail—that of stimulating desire and overcoming stigma. Thus, the Jump Box is intended to be an evolutionary step for the RV and the (urban) home. It is different from other prefabricated solutions in that the focus is not upon creating one stylistic solution with a few variations from one sole manufacturer, but to enable the creation of diverse consumer driven solutions by many parties, through the creation of widely available standards.

7. Conclusion

Innovation is a development that people find useful or meaningful. To be innovative, architects—and works of architecture themselves—must become more responsive to their users and environments. In other words, they must incorporate feedback from their physical and cultural contexts rather than relying solely on conventional analytical or internal processes of development . . . from design to construction.

—Ali Rahim, architect, (2006)

Technological innovation of the past several decades has created emerging global markets, shifting multi-national corporations, and increased fluidity in living circumstances for many. As Rahim suggests, the next step for architecture is to develop in a way that “people find useful or meaningful.” Due to the prevalence of people adopting mobile technologies, it seems overdue for domestic architecture to respond to the same trajectories of recent innovations—enabling increased mobility and furthering global connectedness. While this proposal might seem absurd to some, most who have spent a week or more in an RV (or a tiny urban apartment) will recognize the very tangible benefits of a Jump Box. Certainly, such a solution is not for everyone, but for some it may offer very tangible benefits, allowing them to live happier and more productive lives.

Real estate developers today, not architects, primarily shape consumer expectations regarding domesticity. Their neo-nineteenth century domestic concoctions (while aesthetically desirable for some) are increasingly at odds with consumer’s emerging lifestyles and have inflated to sizes that consume disproportionate amounts of natural resources to heat and cool. Fixed foundation homes have at least four limitations that will be increasingly felt by many—especially by those who are (or those who wish/need to be) digital nomads.

First, the absence of substantive feedback loops (evident in product-design but mostly absent in architecture) prohibits in-depth analysis, adaptation, and evolution of the home. *Second*, the lack of mass-production techniques prevents greater innovation/integration of new domestic technologies, reduced prices, recycle-ability, and higher quality. *Third*, consumers’ desire for brand identity is unfulfilled by most site built dwellings. And *fourth*, increased mobility among the populace is neither accommodated, nor enabled by fixed dwellings that are expensive to acquire/renovate, increasingly located further from urban centers, and time consuming and expensive to move into and out of.

Frei Otto expresses concern for the current architectural climate, writing, “Today’s architecture is at a turning point. The big trends of the last decade are outlived and only a few buildings in the world manifest architectural perfection while paving new ways into the future” (McQuaid, 2006). It is time for domestic architecture to harness emerging technologies and tap more deeply into consumer desires. Mass production efforts will inevitably give consumers greater choice in how they configure their dwellings and permit improved technological integration. For some, the creation of a product like the Jump Box would permit increasing numbers of highly mobile people to live in a far more enabling fashion than they do now. For others who desire (or require) a more settled existence, it would permit a

fixed home to serve as a hospitable base camp for explorations—what Makimoto and Manners suggest as *cerebral nomadism* (1997).

Claude Lévi-Strauss said, “One must be very naïve or dishonest to imagine that men choose their beliefs independently of their situation” (1955). As such, behaviors in any society are shaped by their technological and cultural frameworks; which continuously evolve in a reflexive, and unpredictable manner. Today, numerous governance institutions continue to reinforce settlement patterns based on agricultural conditions that no longer exist. Among these are governance boundaries, land ownership laws, tax structures, zoning laws, and land based utility infrastructure. In light of current technological considerations, the cost and popularity of urban dwelling, predicted environmental changes, and occupational fluidity, fixed dwellings may become less desirable than options that more easily enable mobility and technological integration.

If these institutional resistances to fluidity can evolve, or be overcome, mobile solutions like the Jump Box will invigorate the lifestyle of the digital nomad and perhaps stimulate greater technological innovation for the home. The Jump Box offers a strategy for providing dwellings that is more aligned with current industrial production techniques, cultural desires, and technological integration similar to other consumer products.

In 1935, such was the popularity of travel trailers that Roger Babson, predictor of the stock market crash of 1929, offset his speculative record with this lofty prognostication, “*Within twenty years, more than half of the population of the United States, will be living in automobile trailers.*” (Keister, 2006). If the Jump Box concept is thoughtfully implemented and finds a receptive audience, digital nomads may yet help Babson correct his predictive record.

(Author’s Note: Interested parties are invited to contact me regarding the possibility of becoming involved in the development of open-source standards for this project.)

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References

ABBAS, Y., March 23, 2006. Guest Lecturer, *Digital Culture, Space and Society*, for Picon, A., Harvard GSD. See also [Online], <http://neo-nomad.kaywa.com/>.

- BBC NEWS, Thursday, October 28, 1999.
- BLUM, A., January 2007. "Plug+Play Construction," *Wired*, Issue 15.01, [Online], www.wired.com/wired/archive/15.01/home1.html.
- BMW, 2006. [Online], www.miniusa.com.
- BUILDING RESEARCH ESTABLISHMENT LTD, 2003. *DTI Construction Industry Directorate Project Report: Current Practice and Potential Uses of Prefabrication* Department of Trade and Industry Report, No. 203032. Scotland, 9,14.
- BURKHART, B., AND NOYES, P., AND ARIEFF, A., 2002, *Trailer Travel: A Visual History of Mobile America*, Gibbs Smith Publisher, Salt Lake City,133.
- CORBUSIER, LE, 1985. (1923 *Vers Une Architecture*, Paris : Flammarion). Dover Books Edition.
- COUNCIL OF TOURISM ASSOCIATIONS, 2007. [Online], http://www.cotabc.com/publications/tourism_facts.aspx.
- CUMMINS ONAN, 2007. [Online], <http://www.cumminsonan.com/rv/products/diesel/compare?gensetId=138>.
- CURTIN, R., 2005. *The RV Consumer: A Demographic Profile*, Surveys of Consumers, University of Michigan.
- DAVIES, C., 2005. *The Prefabricated Home*, Reaktion, London.
- DESIGN WITHIN REACH, 2007.[Online] <http://www.dwr.com/airstream>.
- DIAMOND, J. M.,1999. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W. W. Norton & Co.
- DUNBAR, R.I.M, 1992. "Neocortex Size as a Constraint on Group Size in Primates," *Journal of Human Evolution*, vol. 20, 469-493.
- DUNLAP, D., May 11, 2004. *Condos, Not Roll-Tops, on Finance's Hottest Corner*, New York Times. Also [Online], <http://www.downtownbystarck.com/>.
- DWELL MAGAZINE, [Online], <http://www.thedwellhome.com/winner.html>.
- FLORIDA, R.L., 2004. *The Rise Of the Creative Class: and How It's Transforming Work, Leisure, Community and Everyday Life* , New York, NY: Basic Books.
- GOTTMANN, J., 1964. *Megalopolis: The Urbanized Northeastern Seaboard of the United States*, MIT Press.
- HABRAKEN, J., January 4–6, 2007. *Global Place: Practice, Politics, and the Polis Conference*. Taubman College of Architecture and Planning, University of Michigan.
- INTERNATIONAL TELEWORK ASSOCIATION AND COUNCIL, 2007. [Online], <http://www.workingfromanywhere.org/>
- JOINT CENTER FOR HOUSING, 2005. *State of the Nation's Housing*, Harvard University.
- KB HOME, 2005. [Online], <http://www.kbhome.com/martha>.
- KEISTER, D., 2006. *Mobile Mansions: Taking "Home Sweet Home" on the Road*, Gibbs Smith, Layton, Utah, 30.
- KLEIN, S., 2006. *The Science of Happiness: How Our Brains Make Us Happy-and What We Can Do to Get Happier*. Marlowe, NY.
- LEAKEY, R., 1981. *The Making of Mankind*. Elsevier-Dutton Publishing Company, Inc., 65-66.
- LEVINSON, M., 2006. *The Box, How the Shipping Container Made the World Smaller and the World Economy Bigger*, Princeton Univ. Press.
- LÉVI-STRAUSS, C., 1993. [1955, Librarie Plon], *Tristes Tropiques*, Penguin Books, New York, NY. 148.
- LIVING HOMES, 2007. [Online] <http://www.livinghomes.net/homesKappe.html>.
- LEVITTOWN HISTORICAL SOCIETY, 2007. [Online], <http://www.levittownhistoricalsociety.org/history2.htm>.
- MAKIMOTO, T., AND MANNERS, D., 1997. *Digital Nomad*. Wiley, New York.
- MARMOL RADZINER, 2007. [Online], <http://www.marmolradzinerprefab.com/>.
- MCCULLOUGH, M., 2004. *Digital Ground: Architecture, Pervasive Computing, and Environmental Knowing*, MIT Press, Cambridge, MA.

- MITTAL, B., 2006. "I, Me, and Mine—How Products Become Consumer's Extended Selves," *The Journal of Consumer Behavior*, Vol. 5, Issue 6. 550–562.
- OTTO, F. [MCQUAID, M.], 2006. *Shigeru Ban*. New York: Phaidon Press, Foreword.
- NTT INTERCOMMUNICATION CENTER (ICC), 2007. [Online], <http://www.ntticc.or.jp/Archive/2001/NewSchool/design.html>,
- PINE, J., 1992. *Mass Customization: The New Frontier in Business Competition* (Cambridge, MA: Harvard Business School Press.
- POPULATION REFERENCE BUREAU, 2006. *World Population Data Sheet*.
- RAHIM, A., 2006. *Catalytic Formations: Architecture and Digital Design*. New York: Taylor & Francis, 3.
- RANDERSON, J. , 11 June 2003.16:07, *NewScientist*.
- RECREATIONAL VEHICLE INDUSTRY ASSOCIATION, 2007. [Online], <http://rvia.hbp.com/itemdisplay.cfm?pid=47>.
- RVERS ONLINE, 2007. [Online], <http://www.rversonline.org/ArtTexIn.html>.
- SCHODEK, D., AND BECHTHOLD, M., AND GRIGGS, K.J., AND KAO, K., AND STEINBERG, M., 2005. *Digital Design and Manufacturing: CAD/CAM Technologies in Architecture*, John Wiley & Sons.
- SEARS ARCHIVES, 2007. [Online], <http://www.searsarchives.com/homes/>.
- SELF STORAGE ASSOCIATION, 4/16/2007. [Online] <http://www.selfstorage.org/pdf/FactSheet.pdf>.
- SIEGAL, J., 2002. *Mobile: The Art Of Portable Architecture* (New York: Princeton Architectural Press, 2002). 21.
- SORKIN, M., 2003. "Brand Aid Or, The Lexus and the Guggenheim (Further Tales of the Notorious B.I.G.ness)," *Harvard Design Magazine* 17, Fall 2002/Winter.
- TAGGART, S., 1999, "The 20-Ton Packet," *Wired*, October.
- U.N.-HABITAT, 2004/05. *State of the World's Cities*.
- U.S. CENSUS BUREAU, 2007. *Statistical Abstract of the United States: Resident Population by Age and Sex: 1980 to 2005*, Table 11.
- U.S. CENSUS BUREAU, 2007. *Statistical Abstract of the United States: Cellular Telecommunications Industry: 1990 to 2005*, Table 11132.
- U.S. CENSUS BUREAU, 2005. , *Table 35. Movers by Type of Move and Reason for Moving:* [Online], <http://www.census.gov/prod/2006pubs/07statab/pop.pdf> .
- U.S. CENSUS BUREAU, Aug, 9, 2006. Facts for Features.[Online], http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_editions/007276.html.
- U.S. CENSUS BUREAU, 2003. *Statistical Abstract of the United States: No. HS-12. Households by Type and Size: 1900 to 2002*.
- U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, May 2001. *1999 American Housing Brief*, AHB/01-2.
- UNGERS, T., Feb 20, 2007. [Online], <http://www.zillowblog.com/smaller-families-living-in-larger-homes/2007/02/>.
- UNITED STATES POSTAL SERVICE, May 11, 2005. [Online], http://www.usps.com/communications/news/press/2005/pr05_043.htm .
- WALKER ARTS CENTER, 2006. *Some Assembly Required—Contemporary Prefabricated Houses*, Exhibition.
- WALLIS, A., 1991 *Wheel Estate*, Oxford University Press.
- WALTER, R., Interview April 10, 2006. *Bensonwood Homes*. Also [Online], www.quickhomeonline.com.