

Ben Reynard
Professor Berman
Sustainable Design ENVS 664
October 20, 2010

Domestic Transformer

*"The key idea is that everyone could look into their home more carefully and into how better to optimize their resources, because space is a resource."*¹--Gary Chang, Architect, EDGE Design Inc.

Green building practices are constantly evolving. There is a stark contrast between what is and what should be in our built environment. Design philosophies are incorporating sustainable practice with much greater frequency now that "sustainability" is becoming tangible. Green buildings and designs have always existed in some form or another. Technically speaking, a cave would qualify as a green building based on its reuse of an existing structure, construction with recycled and reclaimed materials, and lack of manufacturing energy and resources required to construct and operate it. A structure can end up being green, even if it was not explicitly designed to be green. Green design is an evolution of choice more than anything else: the choice between a wasteful design and an efficient design. Driven by a societal shift towards a greater sense of environmental responsibility, designers, builders, and end-users are making informed decisions to actively move forward toward green designs. With a mix of personal, environmental, and intergenerational motivations, people are choosing more resource efficient and environmentally friendly dwellings. Much like in nature, the designs are evolving in varied circumstances as unique as the places and inhabitants that influence and inspire them.

One such original and forward-thinking design is the Domestic Transformer Apartment in Hong Kong. It is a concept that arose organically in the dense urban environment of China's most populous cities. This design makes use of an existing structure and enhances its utility and efficiency by transforming the floor-plan into 24 different configurations. It is simple and extravagant while maximizing the space of a small city apartment. The Domestic Transformer is sustainable because it helps maximize the individual space within our dense urban cities. Sustainable cities will continue to evolve toward being more dense and more walkable, with greater emphasis on efficient resource use and decreased auto-dependency. One challenge is creating

housing options that are flexible and affordable enough to serve a diverse urban population base. The Domestic Transformer succeeds in offering a glimpse of modular and efficient interior design that could be incorporated into a multitude of designs to conserve and maximize space, utility, and energy efficiency. The design is enticing enough to draw people into crowded spaces that may have previously been ruled out as being too small to be practical.

32 Meters squared, or approximately 344 square feet is a small space no matter where you live. This is the size of Hong Kong Architect, Gary Chang’s apartment. Mr. Chang grew up in this same apartment, and recalls when he slept in the hallway because the apartment was so full of people. This is a common occurrence in a city with over 7 million densely packed residents. Space for living is at a premium. Pressure to do more with less space prompted Mr. Chang to remodel his apartment 4 times since he purchased it from his family in 1988. He has constantly re-imagined his interior space and calls it “an ongoing experiment.”² The latest version of Mr. Chang’s space is called the “Domestic Transformer” because of its incredible versatility and the multiple forms it takes as the apartment unfolds and morphs into different living spaces.



<http://www.designswan.com/archives/domestic-transformer-24-different-room-configurations-on-344-square-foot.html>



http://www.nytimes.com/slideshow/2009/01/15/garden/20090115_HONGKONG_9.html (and all following images on pages 4-5)

The design features tracks upon which movable walls/shelving units deploy from their nested positions. There is an element of origami to the way the apartment unfolds and fits together. With so little space, one must be selective about the amount of “stuff” one brings into their living environment. Only the basics would likely fit in such a small space. This forces the occupant to reduce the amount of material possessions and curtail unnecessary consumerism.

Reflective materials serve the purpose of making the space appear larger and also making it brighter. The windows have a yellow tint to them, which Mr. Chang says adds a feeling of warmth and brightness to the space even on a cloudy day. There is a large tub and a shower which doubles as a steam room. Heating would not seem like much of an energy issue in such a small space, though ventilation and cooling costs may factor in.

The Murphy Bed is in many ways a microcosm of the Domestic Transformer. A simple yet elegant, functional, and space-saving design. Not surprisingly Mr. Chang

has incorporated a hydraulic Murphy bed with a fold down table option which he also designed³. Other unique features of the apartment include a drop down screen and projector which create a large viewing room perfect for Nintendo Wii. There is even room for a guest bed which folds down from above



the tub. Versatility is the Domestic Transformer's greatest feat. The multiple configurations combine to create a unique design synergy. Despite its compact footprint, the inventory of features and total space is impressive: "like a palace by Hong Kong standards with a 300 square-foot living room, a 200 square-foot bedroom, a guest bedroom, full bathroom, spacious kitchen and formal dining room — the kind of square footage that only the über-wealthy dream about in one of the most densely populated cities on the planet."⁴





The Domestic Transformer is a master of space. As Mr. Chang says “I don’t move, the house moves for me.”⁵ What the designer has created an entirely new kind of space within the crowded Hong Kong environment from which it was inspired. The designer hopes it may be an affordable model for other young professionals. Originally purchased for \$45k, Mr. Chang has invested \$218k in renovating his apartment to its current form.⁶ Mr. Chang is the founder of Edge Design Institute in Hong Kong and hopes his designs can help “even the poorest families improve their domestic living condition.”⁷ Living space will continue to be at a premium in our sustainable cities and the Domestic Transformer offers lessons on how to maximize the smaller spaces of our dense cities. “The idea is to tune your home closer to what you really want instead of being dictated by the market or by the space allocated,” said the designer who says he’s now in talks with property developers to replicate his flat in other space-starved, costly cities across Asia and Europe, including Paris.”⁸ When one looks at space as a resource, wasted space becomes an indicator of unsustainable design. Increasing population pressure will continue the trend toward more efficient and compact design.

BELOW: *Mr. Chang's book and the apartment building he's resided in for over 30 years*



<http://www.treehugger.com/files/2010/01/watch-tiny-transformer-apartment-video.php>



<http://www.google.com/hostednews/afp/slideshow/ALeqM5gEPXQx5Te41mUwZ-6mo8RAWw00kQ?docId=CNG.9f2550b66c214ab0c33bc7e0bcc2e487.3f1&index=1>

ABOVE: *Mr. Chang's Domestic Transformer design incorporates many efficient and affordable luxuries within a preexisting apartment building.*

- ¹ Tree Hugger.com, <http://www.treehugger.com/files/2010/01/watch-tiny-transformer-apartment-video.php>, accessed 10/18/2010
- ² NY Times Online, http://www.nytimes.com/2009/01/15/garden/15hongkong.html?_r=1&pagewanted=2, accessed 10/18/2010
- ³ Design Swan, <http://www.designswan.com/archives/domestic-transformer-24-different-room-configurations-on-344-square-foot.html>, accessed 10/18/2010
- ⁴ Mother Nature Network, <http://www.mnn.com/green-tech/gadgets-electronics/blogs/domestic-transformer-the-home-of-the-future>, accessed 10/18/2010
- ⁵ Planet Green Video, <http://www.treehugger.com/files/2010/01/watch-tiny-transformer-apartment-video.php>, accessed 10/18/2010
- ⁶ NY Times Online, http://www.nytimes.com/2009/01/15/garden/15hongkong.html?_r=1&pagewanted=2, accessed 10/18/2010
- ⁷ AFP from Google News, <http://www.google.com/hostednews/afp/article/ALeqM5gEPXQx5Te41mUwZ-6mo8RAWw00kQ>, accessed 10/18/2010
- ⁸ Reuters Online, <http://uk.reuters.com/article/idUKTRE6170V420100208>, accessed 10/18/2010