

## JUNK FRAMES

By Dr. Cristian Suau (UK) & Carmelo Zappulla (Spain)



# JUNK-FRAME

*Form follows materials*

### Potential Space-frames

The logics of reuse and refabrication with industrial waste appear as a visionary realm of architectural research, which acquire an ethical magnitude in the transformation of the built environment; the cost-effectiveness of reused materials; and the incubation of new forms of space-frames applied mainly in experimental dwellings. What game should we play instead by using low-tech and light-tech systems? A sustainable experiment towards potential housing design shows broad possibilities by using manufacturing junk-frames.

### Junk-materials, LFT and New Prototypes

Housing design is living a massive change: Compactness and Lightness <sup>1</sup>. Purchasing a house is one of the biggest expenses that a dweller ever invests. But, does it need to be costly? One field where costs can be reduced and where affordable building solutions are undergoing great experimentation is the domestic application of trash or disused materials. Also the search of new elemental dwellings is partly illustrated by the number of self-builder and designers who are making houses utilizing, for instance, tea-containers or reconditioned shipping boards, by readapting various materials under low-tech manufacturing <sup>2</sup>. However, what is the “cutting edge” of eco-dwelling systems today?

Nevertheless, current building sector has failed to incorporate *know-how* based on junk-frames that might decarbonised the built environment and also enable smaller and lighter construction, with a fraction of the cost of conventional techniques. In informal cities, this situation creates considerable inequalities, where people with even average incomes cannot afford buying or renting a place to live in major formal or informal cities.

As a result, monoculture prevails and many are forced into finding another housing solutions. Making eco-dwellings available for less money would reduce the need for high-incomes in order to afford living. Concentrations of power limit person’s access to land by the force of among other things the notion of ownership.

So, fast-fabricated frameworks made by reused materials emerge as smart building alternative capable of being or becoming visionary space-frames for inhabitation. LFT -Low & Fast Technologies- defines smart design strategies of reuse in each experiment. Our main cornerstones of sustainable design take into account the following aspects:

- Reduce, reuse and re-fabrication
- Do-It-Yourself: Collaborative building process and guidelines
- Low-passive energy applied in prototypes

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<sup>1</sup> Suau, C. *Towards Minimum Dwellings. Manifesto Against Oversized Architecture*, MADE, The Welsh School of Architecture, Cardiff, UK (04/2008), pp 74-83. ISSN 1742-416X.

<sup>2</sup> Codinachs, M; Katarina Mrkonjic & Suau, C. *Incubating Sustainable Architecture: Think-Tank Networks on Cooperation and Progressive Research*, International Conference of the Centre for the Study of Architecture in the Arab Region (CSAAR), Rabat, Morocco (11/2006), Volume 1, pp 167-176. Accessed in 22/08/2008 <http://www.csaar-center.org/publication>, ISBN 9957-8602-0-8

## **Aim**

The proposal is based on the use of specific industrial waste materials as structural frame mainly for compact dwellings. The only requirement for any student is to be environmentally responsible. We will admit a selected group of 12 students (or even less) to carry out this workshop. The design process and selected outputs of this workshop will be inserted in a website and also edited in my current book project on *The Power of Less*.

Above, what this workshop requires is innovative and witty space-makers! We will explore new spatial variations by using 3 standard leftover products with potential application into small-sized or domestic frameworks.

## **Matter**

The chosen materials are:

1. Timber – Euro-pallet boards
2. Rubber – Whole car tyres or bike tubes
3. Metal – Strip metal leftovers from metalwork industry

Every material will be explored and applied for a 4-students cell. All the preliminary analysis and reflections will be carried out in advance online before we start the workshop. There is no introductory stage.

## **Work Plan**

We will meet up 7 times, twice a week half-day tutorials during three weeks and once full-day session during the final review. Easy!

## **Towards Re-fabrication**

All of the examples will be based on handmade fabrication systems. They always need a re-interpretation of particular geometries and modules as the result of the material and its specific structuring potential.

There are different tools, techniques and building processes to achieve the final fabrication, according to the material's features; spatial geometries and configurations; and scales. These experiments are preferentially made in '*chunks*' off-site, before they are transported and erected on-site.

Summarizing, these designs can formulate a rapid implementation of variable and interchangeable frame system of construction: exterior walls as roofing; interior movable buffers, and panels or divisions capable to gather a temporary living, according to types of occupancy and climatic variation. Each can foster the notion of DIY '*kits*' with new building applications beyond the conventional realms of construction market or architectural establishments. Finally, junk-frame designs demonstrate a global adaptability in response to the decarbonisation of the built environment. They are cheaper, faster and greener.

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## JUNK-FRAME

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### SCHEDULE

- Week 1**      **Tuesday 28/04 (morning) & Friday 01/05 (afternoon)**  
Brief and group work. Site analysis and complementary survey of a given case study. Make your own field study
- Week 2**      **Wednesday 06/05 (afternoon) and Friday 08/05 (afternoon)**  
Group work. Research and develop experimental spatial intervention using hybrid system of representation
- Week 3**      **Wednesday 13/05 (afternoon) and Friday 15/05 (afternoon)**  
Group work. Advanced development of spatial and functional strategies
- Week 4**      **Tuesday 28/05**  
**Final Review (afternoon)**

**RUBBER**



**METAL**



**TIMBER**

