

Slinky Cycle Thinking in Urban Shelter Design

A cycle-based Design Process for Sustainable Neighbourhoods



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Abstract:

This short essay presents a reflection on recently acquired knowledge on shelter design in rapidly growing metropolis such as Metro Manila. It focuses on neighbourhood design rather than architecture, introducing Slinky Cycle Thinking (SCT) as an approach that could lead shelter neighbourhood design towards more sustainable solutions by grounding proposals on existing cycles such as routines and generation successions of the people for whom we design to deliver them long-term culturally appropriate solutions.

Introduction

The Oxford Dictionary offers a two-sided definition of shelter. It first defines it as “a **place** giving temporary protection from bad weather or danger” but also, as “a shielded or safe **condition**”. In the first part of the definition, describing the shelter as a temporary occupied place, the shelter seems to simply be the product of a research process, the quest of a refuge, a physical protection, conducted by shelter suppliers or the sheltered themselves. A shelter is then, a final product. The second part of the definition suggests that a shelter is a shielded condition, a protected situation. Then, a shelter is a safe state.

Place or **condition**, product or state, a shelter is a static result. What if we start to see the shelter as a dynamic process? To think of the shelter as a constantly improving condition or as a perpetually adaptable product? Could we really plan shelter neighbourhoods in four dimensions by considering the time impact, not only on the material shelter, the product, but also on the shielded condition?

Trying to address these questions, this essay is divided in four sections. The first one reveals the importance of planning shelter neighbourhoods as processes in time. The second section questions the actual factors shaping urban shelter design according to the observations done during the field study in Manila, criticising their capacity to cope with a long-term perspective. The third segment presents a personal vision of what a sustainable shelter neighbourhood should be in rapidly growing cities, and introduces Life Cycle Thinking (LCT) as a method to integrate the time issue in the design process to create shelter neighbourhoods that are successful on the long-term. The last section puts forward a reflection on the role and tasks of urban designers broaching the subject of multidisciplinary and choices in technology.

1 Urban Shelter Design: Designing a Process

In the context of Metro Manila, shelter design for the relocation of informal settlers seems to be achieved as a simple cleaning process. Wiping an area after the other, making them shine to reveal their value. Cleaning is a spontaneous act. It doesn't consider any long-term perspective because the dust that is wiped will fall back anyway. But what if the dust is pollen? What if it lands on the right leaf, on a fertile soil that, after some time, could flourish a whole city? This is how I perceive informal settlers. A multitude of almost inexistent¹ entities that have the potential to evolve as something we cherish. As Eric Beckström brought out, these people represent an amazing human resource (2012). Aiming to use this potential wisely, I believe that we should offer them a **fertile ground** and some **time**, before seeing blossoming autonomous and resilient communities.

In the pollen analogy, the fertile ground represents the physical shelter, the planned built environment, designed to stimulate acquaintances and to welcome growth. It is the shelter seen as a place, the tangible part of our work as urban designers. The time needed by a community to develop on this fertile soil also has to be part of our planning although it represents the intangible part, often left on the side, of our mission. It is the shelter seen as a safe state. To really be safe, this state has to last, simply because being safe temporarily does not give a long-term safety feeling and does not encourage the sheltered to invest in their future and the future of their community.

Trying to resume the importance of planning shelter neighbourhoods as a long-term process, I first wanted to understand why it is not always the case, by reflecting on the factors I observed as shaping urban shelter design in Metro Manila.

¹ The use of the word « inexistent » is inspired by Mark Vacher's essay *An exclamation mark that tells me I exist*, in which the author suggests that a proper dwelling is a manifestation of the dweller's existence and its capacity to recognize and reflect on his place in the world.

² According to the CIRAI, Interuniversity Research Centre for the Life Cycle of Products, *tells me I exist*, in which the author suggests that a proper dwelling is a manifestation of the dweller's existence and its capacity to recognize and reflect on his place in the world.

2 Factors Shaping Urban Shelter Design in Manila

During a field study in the capital region, we had the chance to observe, on surface, the process of shelter development by meeting, sometimes following, different actors. It made me realise, concretely, that a great amount of issues are influencing shelter design, from physical factors like the landscape and the climate, to social factors such as politics and culture. “Dwelling presupposes something you can be a part of and manifest yourself in. This “in” unfolds in both **material** and **social** dimensions” (Vacher, 2011).

I understood that three of the main factors shaping shelter projects, should cope better with long-term perspective: the economy, the culture and the globalisation. In this order, I am discussing these three issues as a justified but not incontestable hierarchy.

2.1 Economy

Dwellings have to be affordable. Relocated Informal Settlers (RIS) have to be able to pay the amortisation of the shelter they receive. This is why the shelters’ construction cost has to stay very low. Unfortunately, maintaining a low building cost often goes with that fact that cheap dwellings have a poor quality due to cheap materials and/or a cheap planning. This quest for cheapness observed during the field study is only profitable in the short term, for a minimum investment cost. It considers the shelter as a simple product, without warranty.

Knowing now that an extremely high amount of RIS does not pay their amortisation, I believe it is time to change the priorities. I believe that by planning quality shelters in mixed-use neighbourhoods providing job opportunities, formal and informal, the chances to involve RIS in the maintenance of their shelter and the economical development of their communities are higher.

Johnny Åstrand brilliantly resumed the situation by putting forward the idea that a shelter that was a bit more expensive to build and is occupied costs less than a unit that didn't cost much to build if it is empty (2012).

Long-term thinking should be adopted to be able to find the appropriate balance between initial investment and operation cost of a shelter. Simply because if the RIS are not able to pay their high electricity bills due to the use of air-conditioning in poorly insulated units, they won't afford to pay their amortisation. In this case, there is no return on the investment for the developers.

2.2 Culture / Survival culture

As 'culture' is the sum of socially transmitted behaviour patterns defining a particular group, a certain community or a population, we could think of the 'slum culture' as being a 'survival culture'. In deed, the collective attitude shared in informal settlements is to live day by day, trying to fulfil its family basic needs without savings, without insurances, without resilience.

The survival culture, by default, implies the impossibility to consider a long-term perspective. With the fragile character of the informal houses, their insecure future threatened by the municipalities' stakeholder's ambition, it is understandable that even if slum dwellers care for the informal community they are part of, the survival culture remains. Dissolving informal communities by relocating some of their inhabitants in shelter projects does not mean that the RIS will be able to sustain themselves better. Once relocated, families have to find new income sources to be able to survive. Welcoming them in insulated monofunctional shelter neighbourhoods does not give them the chance to live beyond this survival culture as they have to rebuilt a community from the start.

2.3 Globalisation

Globalisation intensifies the competition in the sector of construction materials. Looking for the lowest cost materials, shelters' providers, aiming at delivering affordable dwellings, often have to choose the cheapest option. No matter if the components is local, stimulating the local economy, or not. While some countries import inexpensive roofing sheets from China, other developed countries export lightweight prefabricated buildings to developing countries. Positively speeding-up the construction process, the use of prefabricated components is unfortunately questionable when considering the durability of the shelter. As Per Iwansson

revealed in his study (1993) of the aging of prefabricated housing from developed countries delivered in three developing countries (Vietnam, Algeria, Angola), the fast deterioration of prefabricated shelters is mainly linked to the fact that their design is not adapted to local climatic conditions (extreme humidity, mould, termites, strong solar radiations) and cultural behaviours (routines, maintenance of foreign standards).

Coming from abroad, prefabricated housing contributes to a globalisation of architectural styles by being too often insensitive to vernacular forms and construction techniques. The modern "form follows function" style is a foreign fashion, an ephemeral trend. As vernacular architecture finds its inspiration in local climate and culture, it is a long-term solution.

3 Design of Sustainable Shelter & Neighbourhoods

Before presenting my young thoughts on how a sustainable shelter and neighbourhood should be achieved, I have to define what "sustainable" means and, of course, I will quote the Bruntland's report: "Sustainable development is development that meets the needs of present without compromising the ability of future generations to meet their own needs", (1987).

Quoting, once again, this overused definition made me realise something that I have not really thought through before... Human generations, relaying each other, are cycles. Therefore, sustainability is a successful cyclic pattern. Imagining a first cycle that can sustain the upcoming ones, and so on, is long-term thinking. If we give it a shape, it would be a well-balanced vertical spring:

Could this thinking be applied in urban shelter design? I believe it can. Designing a neighbourhood to welcome a first generation of informal settlers that could develop a successful and resilient community able to train the next generations to contribute in the community development is not easy, but it is possible. It should be the long-term goal of every shelter project. I called this approach:

the Slinky Cycle Thinking (SCT).



3.1 The Slinky Cycle Thinking

Inspired by the concepts of Life Cycle Thinking² and Social Life Cycle Assessment³, the Slinky Cycle Thinking, in urban design, makes an attempt of adopting a time-based approach to produce better analysis of the contexts of implementation for shelter projects. It consists of a study of the existing cycles in a targeted population in order to reproduce them in their future neighbourhood, to improve them, to deliver to the RIS the fertile ground on which it can develop in a sustainable succession of generations, a succession of fruitful cycles. Returning to the pollen analogy, is not pollination a successful cycle?

This essay has to stay short, so it is time to present a more pragmatic reflexion. It is time to test the Slinky Cycle Thinking approach in urban design. Concretely, what are the cycles that should be analysed in a population to help urban designers understanding the context of implementation of a shelter project? I identified two cycles: the routines and the life phases of the inhabitants.

3.2 The routines

Understanding the routine of the people for whom we design is imperative. Mainly because planning a neighbourhood is, in a way, drawing the routine of its future inhabitants. Therefore, their actual routine has to be well understood to be able to deliver a shelter that suits its dwellers by being inspired by the cultural factors and the traditions influencing their everyday life. Taking the time to trace the daily, weekly, monthly routines of the population may seem like a heavy task. But I believe that, at this level, the SCT is a method that could save some time during the context study by focusing on the cultural factors directly reflected in the routine of the inhabitants rather than getting lost studying the targeted culture in general.

² According to the CIRAI, Interuniversity Research Centre for the Life Cycle of Products, Processes and Services, Life Cycle Thinking is defined as “a production and consumption strategy that aims at taking into account all of the impacts that a product or service will have throughout its life cycle, “from cradle to grave” ”.

³ According to the United Nations Environment Programme, Social Life Cycle Assessment is “a social impact (and potential impact) assessment technique that aims to assess the social and socio-economic aspects of products and their potential positive and negative impacts along their life cycle”.

I think that a better way to access this information is by being in direct contact with the population, by interviewing them, just like our research group did during field visits in Metro Manila. After conducting interviews with households among different income groups there, I realized that for each family, the most useful information out of the meetings was the one directly related to their routines. What is the first thing they do each morning? How often do they go buying food? What do they do on weekends? Simple questions exposing their lifestyle revealing what spaces they use/need, what services they use/need, what connections are used/needed and at which frequency. Simple data that we need to cope with in our designs.

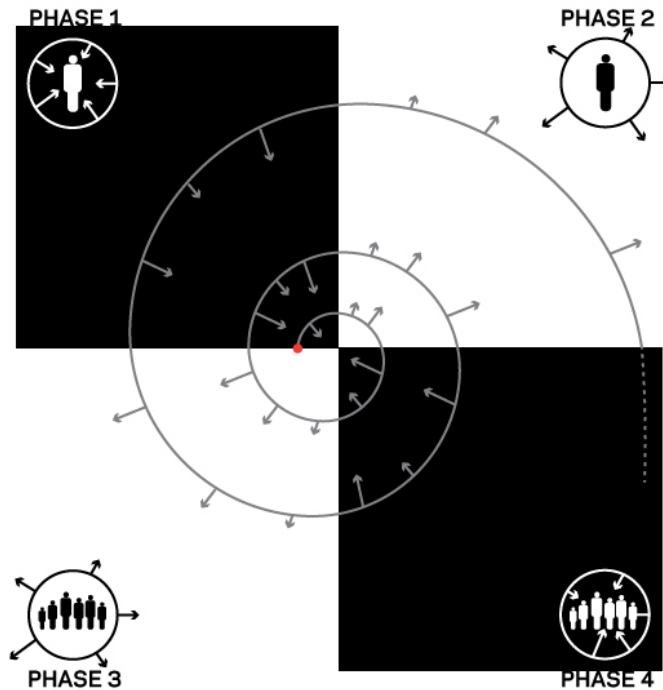
It is not just informative to be immersed in the living milieu of the inhabitants for whom we work. It also becomes a great source of inspiration, no matter if they are from the same or a different culture.

A good understanding of the routines through SCT can also reveal how urban designers could/should influence them through a neighbourhood design to make them evolve towards a more sustainable lifestyle. This idea is directly inspired by the Life Cycle Assessment (LCA) technique used, for instance, to expose the phases of the life cycle of a product or a service that have the heaviest impact(s) on the environment to be able to minimise them so the product or the service becomes more sustainable (CIRAIG, 2012).

3.3 The life phases

As mentioned earlier, lives are successive cycles. Looking at the life span of a shelter project, extending on many decades, we cannot see life as a linear process with a birth and an end. Life is a suite of overlapping generations and all generations of RIS are going through the same phases. I identified four life phases to consider the evolution of a shelter project to plan it as a process and not a product (Fig. 1, p. 9).

Figure 1: Four life phases of relocated informal settlers' life cycles.



As the red dot in the figure above marks the arrival of RIS in a new shelter project, the grey spiral represents the succession of growing cycles induced in the empowerment process, each divided in four stages. Phases one and three (black) are focussed phases characterized by introverted growth and stabilisation. The phases two and four (white) are the opening phases, the participation to extroverted growth. Phases one and two concern the individual that, once relocated, has to stabilise its state, focus on him/herself and his/her family's basic needs before entering the second stage. During the second phase individuals are able to fulfil their family needs easily and start opening up to other individuals starting to create a community. In the third stage, the community is tightly woven. Families know each other's, they exchange, discuss, barter, and trust each other. It is in the next stage, that the sustainable mechanism, the succession of cycles, starts to operate. When, in the fourth phase, the community has its resilient organisation, it opens itself to growth and welcome new individuals that will then be assisted by individuals that has been through the previous cycle to go through the first phase of stabilisation, and so on.

The Slinky Cycle Thinking is a specific method to analyse implementation contexts in order to inspire the planning process with a cycle-based approach. Because routines are cycles forming lives, other cycles. If we give this approach a shape, it would be a slinky:



A slinky because each loop represents a generation of relocated informal settlers, which have been through the four phases before supporting the next generation who will engenders the success of the next one. A slinky because its flexibility, its capacity to absorb shocks, symbolises the resilience of a sustainable cycle-based community planning based on a long-term empowerment spiral.

4 The Role of Urban Designers

The complexity of each shelter project necessitates a cross-disciplinary approach. Should urban designers be trans-disciplinary professionals or part of multidisciplinary teams? On one side, urban designers need to be able to have a holistic vision of the shelter development problematic going from the understanding of social problems linked to high density, to economical profitability of a project. The main role of urban designers is **to shape space between buildings**, guiding and stimulating the life that inhabit it, while targeting sustainability by using the understanding of environmental, social and economical present and future influences on the shaped project. Therefor, urban designers have to be transdisciplinary professionals. On the other side, my young experience as environmental scientist and urban designer thought me that it can become overwhelming to try to cope with all the data gathered on all the issues surrounding a project. Searching for developing THE perfect answer to a design problematic puts a break on creativity. And what distinguishes the designers in a planning team? Their creativity. Their task is to come up with innovative ideas, tons of ground-breaking ideas, that other specialists can recalibrate according to the knowledge their are masters of. Designers have to use their creativity to

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imagine and suggest win-win situations, win-win potentials that are often hidden where disciplines could meet each other. To preserve their creativity, designers have to be part of multidisciplinary teams more than trans-disciplinary professionals.

As the economy is the main factor shaping USD, our role is to cope with the economy while targeting sustainability. Looking at Economical Life Cycles in time could justify certain investments in technologies. Our role: targeting the right technologies. Raymond Loewy came up with the MAYA theory in designing new solutions. It consists of the quest for the “Most Advanced Yet Acceptable” answer to a design problem, the most innovative possible solution that is not too "avant-gardiste" to be misunderstood. In the context of the relocation of informal settlers, we must adapt its brilliant principle by haunting the “Most Advanced Yet Affordable” technology. Using the most advanced knowledge to choose the best affordable technologies. As some low-tech solutions can be based on very advanced science, I believe it is a great line of thoughts.

As student, we are now contributing to the housing fields with ideas even cheaper than affordable knowledge. Of course, our ideas are often naïve and clumsy. That is why it is good, for students, to be part of a multidisciplinary team. As creative spirits, I really think it is important to stay naïve and idealistic in our approach developing projects. If we stay too rational, we don't shake grounds. We don't really question existing situations on which it is fun to read / write.

Conclusion

Through this fantastic semester, I realised that urban shelter design is a complex task that has, in order to be sustainable, to be planned as a continuous process rather than a delivered product. To insure the good development of this process, urban designers have to see each shelter neighbourhoods as a fertile soil ready to welcome the first cycle of a flourishing succession. In his essay on pollen architecture and pollen cities, Yann Moulier Boutang states that: “the pollination is several hundred times more valuable than the resulting honey” and that is why “the aim is to build and equip the city as a learning milieu, not as a monumental sum of archived data”. I picture his idea of a learning milieu as a community in which a diversity of knowledge can be generated and spread. As designers, we have to provide an adapted variety of spaces to receive it that should be validated by experts from other disciplines.

The Slinky Cycle Thinking is the result of a desire to summarise recently acquired knowledge on urban shelter design, presenting it in a theoretical form to suggest new ways to look at the problematic of shelter delivery in rapidly growing cities. It is abstract enough, on purpose, to start a discussion. As Donlyn Lyndon wrote: “learning to care, sustaining attention, keeping discussions open, putting ideas out for others to consider, turning the page towards tomorrow, are necessary conditions for creating a way of being in the world that is sustainable” (2011).

List of acronyms

RIS	Relocated Informal Settlers
LCA	Life Cycle Assessment
SCT	Slinky Cycle Thinking
SLCA	Social Life Cycle Analysis

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