

## **Abstract**

Title: Preventing Rural Exodus through Development in the Pampas  
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Rural Brazil has gone through a crisis in the past century. Modernization and technology shifts has left agriculture in few very mechanized hands and pushed the rural labor force into industrialized urban areas. This phenomenon is called the *Rural Exodus*.

The Pampas, the southernmost tip of Brazil, are symptomatic of the exodus. Establishment of free trade zones along the state's borders with Uruguay and Argentina has allowed new economic opportunities and influxes of investment in the area.

Opportunities to reverse emigration patterns have sprouted in small-scale projects pushed by strengthening interest in economic strategies of micro-credit and self-empowerment. These ideals can mold an architectural study of design strategies that empower the rural individual to develop from scratch a home, a business, and collectively, a community. Design through regional tectonic strategies for economic development is essential to the alleviation of the rural exodus in the Pampas.

# **PREVENTING RURAL EXODUS THROUGH DEVELOPMENT IN THE PAMPAS**

by

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2009

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For my loved ones for inspiring me to seek making as remarkable a presence in your lives as you have in mine.

For the worker. May I one day make his life as beautiful as the land he cares and lives for.

Para a minha família, Nelsão, Guriezinha, Mana, todo meu amor e carinho, juntos por tudo.

To Catherine, Jason, Jon, Lisa, Liz, Matt, Moud, Peter, Ponsi, Rits, Rob, Shawna, and Zak. For you who have seen me through all the messes I get myself into, if there is one mess I'll never regret getting into it is spending these last years with you.

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## Introduction

Every civilization in history has come to be for a reason. A civilization is formed by individuals in search for their necessities and their desires. Individuals form a symbiotic relationship with each other to form a society, and they choose a physical location that can satisfy their necessities and desires - thus creating *place*. Since the term *place* can be used in several different ways, it is important to define the ways in which the word is referred in this work:

place |plās|

noun

a portion of space occupied by someone : he was watching from his place across the room.

the role played by or importance attached to someone or something in a particular context : *the place of computers in improving office efficiency varies between companies.*<sup>1</sup>

Individuals have always chosen a physical place for its significance as a place in their civilization, that is, a place has its place in civilization. The *importance attached to [a place] in a particular context* can be best defined as its *raison d'être*:

raison d'être |rā'zô n 'detr(ə)|

noun

the most important reason or purpose for someone or something's existence : *an institution whose raison d'être is public service broadcasting.*<sup>2</sup>

To complete the definitions of terms, the context to which importance is attached by place is *civilization*:

civilization |,sivələ'zā sh ən|

noun

the stage of human social development and organization that is considered most advanced : *they equated the railroad with progress and civilization.*

• the society, culture, and way of life of a particular area : *the great books of Western civilization | the early civilizations of Mesopotamia and Egypt.*

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<sup>1</sup> McKean, Erin, ed. "Place." Def. 1. New Oxford American Dictionary. Print.

<sup>2</sup> McKean, Erin, ed. "Raison d'être." Def. 1. New Oxford American Dictionary. Print.

the comfort and convenience of modern life, regarded as available only in towns and cities : *the fur traders moved further and further from civilization.* <sup>3</sup>

The definition of civilization as a modern idea of luxury particularly available in towns and cities, or rather, developed urban areas. It is not a coincidence that modernity to most has become analogous to urbanization and development. The image of cities with glimmering skyscrapers and massive highways connecting them to highly industrialized farms has come to represent the modern civilization while the individual rural workers living in modest homes among modest crop fields has come to represent the old civilization.

The shift in the image of civilization is not a matter of misrepresentation of the truth, but really an accurate imagery of the actual shifts in human behavior over the past two centuries. Since the beginning of the Industrial Revolution in the 19th century, cities have become more than ever the destination for what is considered *civilization*. The industrialized city provides all the material and social necessities for the individual and its allure attracted into the world's cities close to three billion people as of the turn of the 21st century.

It is not the image of the city or its economic dominance that is so devastating to the well-being of the majority of the global population. The appeal of the city has existed from the times of the Babylon and the city has always provided for the developments in government and intellectual thought from ancient times to today and for the foreseeable future. The devastation of modern urbanization is distinctly present in urban and rural areas, particularly in the developing world.

The most evident effects of urbanization in developing countries is poverty. The vicious cycle of urban poverty brings with it violence, high birth rates, shortage of resources, immeasurable suffering, and yet more urbanization. Slums surround most metropolitan areas in the developing world. Kibera, in Nairobi, is home to over a million Kenyans and is the largest slum in Africa. Roçinha, in Rio de Janeiro, houses 150,000 and has covered one Rio's famous hills.

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<sup>3</sup> McKean, Erin, ed. "Civilization." Def. 1. New Oxford American Dictionary. Print.

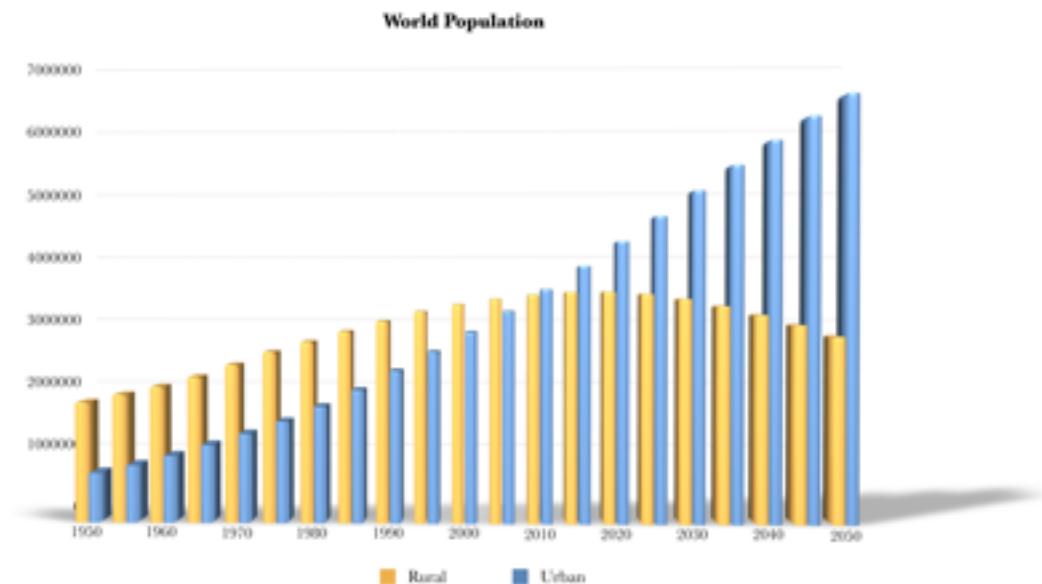
There has been plenty of attention given to slums over the past decades. Architects and planners, economists and politicians have all theorized and experimented in finding canonic solutions to poor regions of cities. Housing projects were built, community centers were founded, yet the populations of slums continue to grow exponentially. The fact is that the other devastating side of modern urbanization has been the decimation of the rural interior.

The developing world's rural areas have lost their *raison d'être*. From their first inhabitation the rural areas between urban nuclei served as the bread baskets of the cities as well as the way of life for the vast majority of the world population. Since industry (and eventually service) became the primary employment generator in the past centuries, there has been a mass migration into industrialized regions. Industrialization has also taken over the agricultural production of most countries, shifting food production into fewer larger farms. Small country towns have progressively lost their reason for being and as the economic dominoes fall the rural population found more opportunities in the cities and leave the rural interior. With no population and no production, there is no *raison d'être* and there is no civilization. The causal mass migration to urban centers is termed the rural exodus.

On the next page is the a graph taking the World Bank calculations for the worldwide rural and urban populations since 1950 and predicted to 2050.<sup>4</sup>

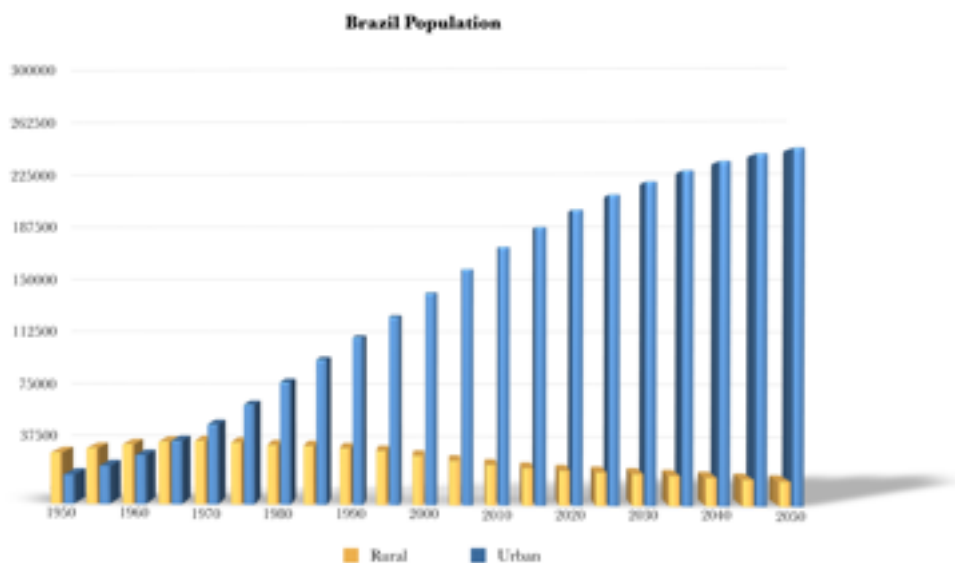
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<sup>4</sup> Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2007 Revision, <http://esa.un.org/unup>, Thursday, April 30, 2009; 2:06:13 AM.



1. World Population Growth, Urban vs Rural

Compared to the world urbanization, this phenomenon has happened in the developing world is exponentially faster. South America, South Asia, and China are the most rapidly urbanizing areas in the world. Particularly extraordinary is the situation in the larger developing countries like Brazil. Below is the same graph for Brazil.<sup>5</sup>



2. Brazilian Population Growth, Urban vs Rural

<sup>5</sup> Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2007 Revision, <http://esa.un.org/unup>, Thursday, April 30, 2009; 2:06:13 AM.

Although the rural exodus is a global problem with many similar causes and effects throughout the regions of the world, the last century of attempts to ameliorate the living conditions for the poorer sections of the population have brought an entire additional layer of complexity to urban poverty through failed attempts at highly idealized urban planning solutions, frustration at the low rate of success in genuinely altruistic attempts at aiding the poor, and has progressively reached a point of apparent futility - a general sense that the problem of urban poverty and migration is inevitable and irresolvable.

A wave of new principles has recently come to propose smaller scale solutions to the problems afflicting the lowest classes. Bangladeshi economist Muhammad Yunus won Nobel Prize winner in 2006 for his work as founder of Grameen Bank. Grameen provides small loans to individual “entrepreneurs”, mostly women who need capital to produce goods with their skills. Clone banks have appeared in every continent providing micro-lending programs to those most at need of credit.

In Brazil, many of the major cities have begun projects to provide street vendors, or *camelôs*, with permanent structures to do business. Although these places are entirely irregular and do not comply with taxation and business laws, they are successful in maintaining a large portion of the population employed in the informal business sector. Also in Brazil, designers like Johan Van Lengen have contributed to the amelioration of the poor’s difficulties by providing educational opportunities like Lengen’s book *The Barefoot Architect*, a broad instructional book on modest and cheap building construction techniques.

The new generation of solutions all encompass similar principles that contrast to past generations. The 20th century sought to find canons of human decency in physical form. Groups like the Congrès International d'Architecture Moderne (CIAM), led by architects and philosophers like Le Corbusier and other socialist-leaning thinkers, took up the task of designing spaces that determine how people live. The new generation of solutions are based first on how people live; from their lives then the solutions are organized in forms of credit, education, or structures. Any of these strategies follow humanist philosophies of self-empowerment and eudaemonia:

All member organizations of the International Humanist and Ethical Union are required by IHEU bylaw 5.1<sup>6</sup> to accept the IHEU Minimum Statement on Humanism:

Humanism is a democratic and ethical life stance, which affirms that human beings have the right and responsibility to give meaning and shape to their own lives. It stands for the building of a more humane society through an ethic based on human and other natural values in the spirit of reason and free inquiry through human capabilities. It is not theistic, and it does not accept supernatural views of reality.

Eudaimonia (Greek: εὐδαιμονία)

noun

a classical Greek word commonly translated as 'happiness'. Etymologically, it consists of the word "eu" ("good" or "well being") and "daimon" ("spirit" or "minor deity", used by extension to mean one's lot or fortune). Although popular usage of the term happiness refers to a state of mind, related to joy or pleasure, eudaimonia rarely has such connotations, and the less subjective "human flourishing" is often preferred as a translation.<sup>7</sup>

The idea of empowering the individual as a mean to keep him from poverty has shown strong potential as a very gradual but very persistent method and merits more representation in design fields. Consistent with the small scale of the solutions, the approach to a design that can sprout individual empowerment can only be approached at a relative small scale and therefore site specific and regional. As was made clear in the graphs of the world and Brazil's rural and urban population patterns, Brazil is an ideal ground for testing the philosophies of eudaemonia and empowerment in architectural solutions to the rural exodus. An approach that can empower the individual and give him a reason for being can return the civilization, the place, and the *raison d'être* to rural interior.

It is complicated to develop an approach through design to incorporate the philosophies just mentioned. The contribution of a few particular fields has been much more well developed than most. Economists and politicians have developed many

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<sup>6</sup> "IHEU's Bylaws". International Humanist and Ethical Union. <http://www.iheu.org/bylaws>. Retrieved on 2008-07-05.

<sup>7</sup> See Aristotle's Psychology, By Prof. Daniel N. Robinson (1999)

directions in policies and practices to deal with the effects of the rural exodus, but lately advocates of professional benevolence have been pushing for all businesses and professionals to incorporate charity in some form into their profession. Bill Clinton has been among the strongest advocates of such professional practice, expressing himself in his book, *Giving: How Each of Us Can Change the World*. He proposes that businesses can do the world a great deal of good if they consider charity an investment and part of their business plan<sup>8</sup>. Architects are at an auspicious position to not only incorporate financial benevolence into their business plans, but to allow benevolent design to be the financial agent of their business plans.

This is a delicate proposition. Design often leans too far into academia, into ego, into idealism. Too many proposals to change the character, the *raison d'être*, of a place appeal to displace the current situation of that place and design a utopian future for the place without the practical sensibility that what is there in the present is there for a reason whether it fits or does not fit the utopian ideal. With that in mind, the design approach cannot be invasive nor delicately surgical, it should be a medicinal intervention. To continue with the analogy, it must stop the bleeding and foster re-growth of that urban and social tissue. It must be a modest gesture yet a strong enough skeleton in concept, form, and, most importantly, function to sponsor a new generator of wealth for a region. In the case of Brazil's rural areas, the architectural intervention should focus in the small rural population centers and must promote a more cyclical flow of capital and goods through the different regions. With that the rural population center can flexibly flourish through a local opportunity for the generation of wealth and the improved connectivity of these regions will benefit the all sections of society, rural and urban, and ultimately slow, or ideally reverse, the rural exodus.

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<sup>8</sup> Clinton, Bill. *Giving How Each of Us Can Change the World*. New York: Knopf, 2007. Print.

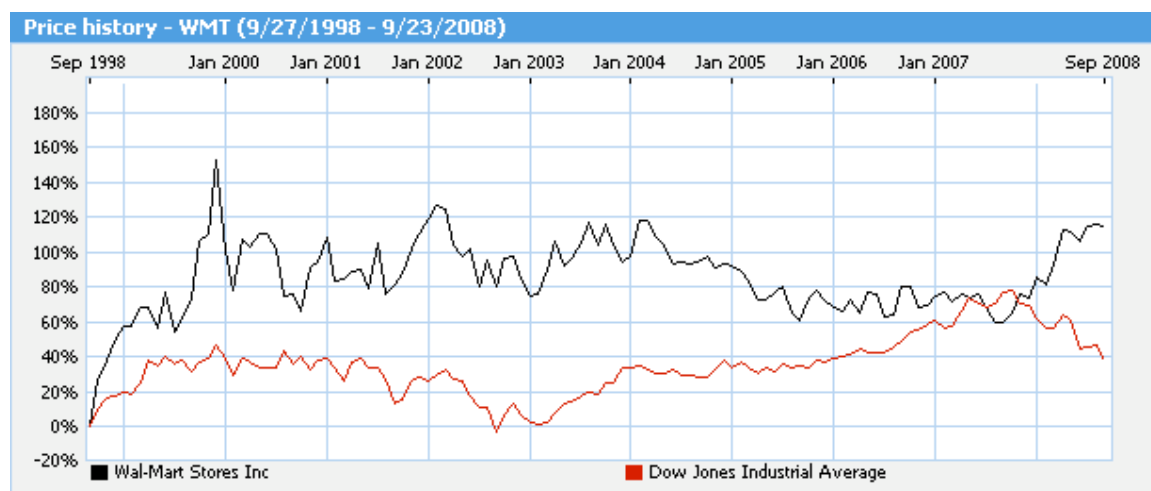


## What I can learn from Carrefour, Wal-Mart and other giants

Everyone hates giant hypermarkets. Middle upper class and upper class hate giant hypermarkets. They hate hypermarkets that aren't Target. They hate hypermarkets because they destroy the local businesses, the small mom-and-pop shops that are left without means to fairly compete. Yet, there are plenty of business lessons to be learned from these dark empires - lessons that can be translated into good.

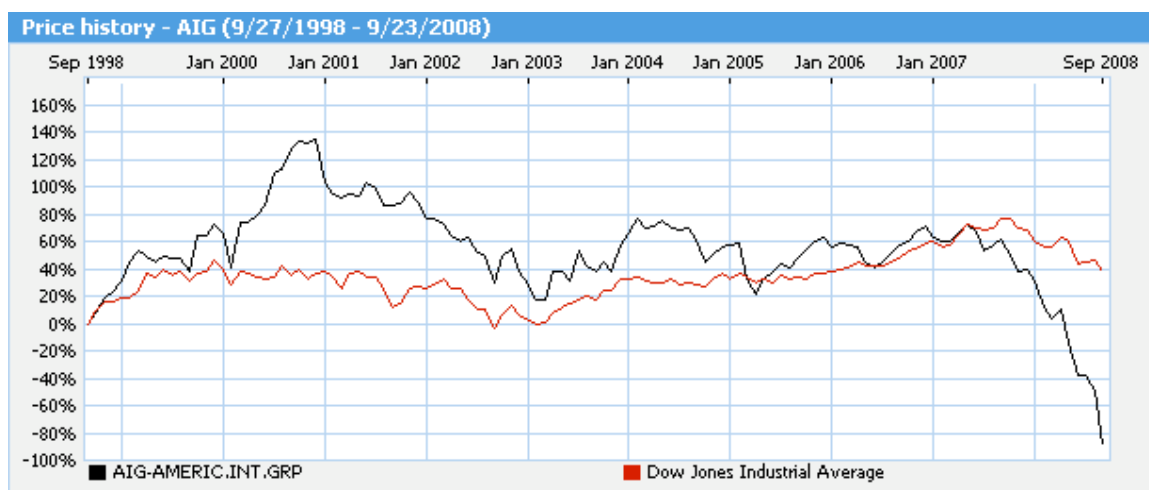
There is something to be said about two of the largest businesses in the world consistently making profits while left and right there are investment companies breaking down when their sole raison d'être is to find means of making money. If their customers were well-off individual investors with surplus money and the companies themselves were investors with their collective surplus one would think it would be much easier to muster a profit with all that extra transitional money instead of selling low-priced goods to the lower and middle classes 99 cents at a time.

Observing the trend in the past ten years between the DOW Jones, Wal-Mart (top), AIG (bottom), there seems to be a lopsided success on Wal-Mart's side when compared to the general market without any predictions of a devastating crash.<sup>9</sup>



3. Price history for Wal Mart stocks

<sup>9</sup> "MSNBC Quote & News - MSN Money." *Personal Finance and Investing* - MSN Money. Web. 10 Aug. 2009. <<http://moneycentral.msn.com/investor/research/msnbc/newsnap.asp?symbol=aig>>.



4. Price history AIG stocks

It's strange to think so much time and effort goes into market research in so many businesses. They worry that recessions and economic fluctuations will create variations in the sizes of their markets and their consumption power. These markets are often soccer moms, teenagers, retiring baby boomers, and so on. How are these market researchers so narrow minded to miss the largest and most consistent market in the world - the lower half. Sociologists emphasize the fact that the poorer half of the world is consistently lacking in every possible aspect of life quality. They are too often considered non-productive and non-consuming heads in an irresolvable misery. This stance dismisses the basic belief that people are created equally and hold unlimited potential to grow as contributors to society. The poor do not need charity, they need access. They do not need free material goods, they need a means to produce and purchase those goods themselves. Wal-Mart and Carrefour provide the access and low prices to the upper crust of the poorer half, those who have reached the point of making purchases of minimal luxury. Their market base will not disappear anytime soon. If anything it will only grow throughout developing areas. It is no coincidence that Carrefour's largest market after its home in France is Brazil. The lower class is a consistent and powerful share of the market. They are increasingly more demanding and more economically decisive as they become more empowered. Therefore, they are also a safe and stable consumer base since they are the most accurate followers of the "invisible hand" of Keynesian economic theory. Their money is almost entirely rooted in production as opposed to the middlemen

of service that consume profits from the transaction of money, money that is more available in good times than bad. The labor-intensive lower class is still the base of the economy and will always consume.

There is so little confidence in the blue-collar worker, the informal businessmen, the "uneducated", yet they are the most adaptive and innovative class in our societies. Rarely will we see a laid-off accountant stoop down to work at the supermarket or sell hot dogs on a corner. They have financial fat to burn and will burn it beyond their means, into debt and terrible business decisions. They have too much pride.

The unspecialized worker will find a job somewhere somehow. He will find a way to survive - he has no time for pride, which shamefully leaves him at the hands of exploitation. He must be empowered to create his own way of life from scratch, to blossom into a small-scale businessman with his footprint on his land and his society. This is the point at which architects and developers participate in a business model that will benefit both sides. The investors shift their loaning strategy to a much smaller scale where the consumer is the resident or owner of the new modest dwelling and will only be considered productive once their way of life is established with the minimal infrastructure provided by the builder. They do not have any credit until they have already received the loan and building and will repay their debt once their business picks up. Architects are responsible for creating the most efficient and appropriate dwellings for the individuals and their growing communities. Ideally the architect is the banker, their surplus from larger projects in richer areas can fuel the banking of the small projects. The architect can more than ethically charge interest for the loan, charge for the design, and profit from the exposure in a developing area as a sensitive and competent designer and builder. An investment model along these lines is a viable proposal for the future of development and urbanization in the developing world as well as poorer areas of the developed world. It is not a new model by any means, if anything it is reverting to the principles of the construction business with a conscious and competent designer as its central catalyst.

### **Follow-up on "What I can learn from Wal-Mart..."**

On September 23, 2008, I posted "What I Can Learn from Wal-Mart, Carrefour, and other giants", commenting on the financial potential of the lower class consumption power and the shift in target groups for business in a world becoming increasingly driven by all classes and the developing world.

In the offset of the downward spiral of the global recession of this year, I postulated that companies like Wal-Mart and Carrefour are strategically organized to thrive in hard times because of their target market.

On November 13, 2008, my postulation was reinforced by Wal-Mart's third quarter earnings, with the company profits rising 10% while other companies sank. Here is an article from the AP on the matter.<sup>10</sup>

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<sup>10</sup> "Wal-Mart's quarterly profit rises 10 percent" <<http://www.msnbc.msn.com/id/27696162/>>

## Entitlement and Anarchy

“Bang for the buck” is at the core of all economic decisions. It is also at the core of economic and ethical philanthropic decisions. One major discussion has developed in the recent years among the upper crust of deep-pocketed intellectuals about the access to computer technology to the very poor in places such as Africa and South Asia. On one side were the money pumpers – the likes of Larry Ellison proposing that the cheaper the computer the more access to more people. The opposition from the idealists, headed by Bill Gates, proposed that it was not enough to provide just any computer; the poor deserve the best that technology has to offer as well.<sup>11</sup> It is hard to decide whether this debate is more analogous to a teenager buying a \$500 first car to get on the road or the Seinfeld muffin top fiasco where the homeless demand the entire muffins be donated, not just the bottom halves<sup>12</sup>.

In development plans for the poorer regions of the world the consensual approach has usually been aligned with the “better than nothing” ideology where the rich give what they can find and the poor get what they can grab. The standards of micro-lending have embraced this ideology, assuming that the bare minimum is enough to kick-start the small entrepreneur’s financial growth. Perhaps the strongest argument against Grameen Bank’s involvement in Bangladeshi development has been its haphazard distribution of land through small loan purchases. The incremental purchasing of lands moving away from the central cities of Bangladesh and other developing countries has been blamed for the rapid urban sprawl taking over rural areas. For countries whose populations are still in the transitional phase of rapid growth due to high birth rates and low death rates, low density suburban development is not an efficient or sustainable pattern of development. There is a need for some level of master planning when it comes to providing people homes and ways of life through development. The implementation of an overseeing organization is ethically problematic though, since it conflicts with the idea of the small entrepreneur

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11 "The Difference Between Bill Gates and Larry Ellison: -," *Reason Magazine*. Web. 10 Aug. 2009. <<http://www.reason.com/news/show/36062.html>>.

12 Feresten, Spike. "The Muffin Tops." *Seinfeld*. Dir. Andy Ackerman. NBC. 8 May 1997.

having full liberty about how to invest in business, land, and construction. In the general structure of micro-credit, the loan is not pending a particular direction in investment.

Argentine architect Victor Pelli presents a dilemma to begin his book, *Habitar, Participar, Pertenecer* – how does a designer balance the necessities of the individual with the satisfaction of social standards?<sup>13</sup> He proposes no earth-shattering solution in his book other than reason and sensibility. He emphasizes the effectiveness of individualized attention, small-scale studies and projects, and the assumption that no one knows better than oneself what one needs. As a designer himself, he reminds the all too often omnipotent educated designers that they must provide a service to those in need, not indoctrinate them and force them into our idealizations of what their lives should be.

The direction design must take in a developmental intervention in the rural zones of Brazil must embrace the vernacular and maximize the actual. To be regional is not to solely embrace the physical characteristics of a region. Regionalist design embraces the local civilization - the built environment, the natural landscape, the political and social norms, and the desires of a region. An additional aspect that is not always considered in regionalist theory is the economic viability of the design and the use and occupation of the building. The commonly envisioned situation for a regionalist design is the traditional old city fabric where the infill design should be designed aesthetically and functionally sensitively to the context. Many times the terms regionalist and contextual are used interchangeably, yet the situations like the one just mentioned are more in line with contextual theory than necessarily regionalist theory.

Throughout history town development has always been a strong characteristic of societal behavior and needs. The exceedingly rapid population growth of the past centuries is slowing in comparison to fifty years ago, but the regionalist approach has not yet reached the urban scale development beyond a superficial and nostalgic direction. An opportunity for the creation of place exists in so many underdeveloped “place-less” regions of the world. They are not necessarily wrongly developed; they are not developed fully, as the prefix *under-* would suggest. This situation lends itself not ripe for

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13 Pelli, Victor S. *Habitar, Participar, Pertenecer: Acceder a la Vivienda: Incluirse En La Sociedad* (2006)

redevelopment but simply general development. These regions require infrastructure, organization, and most importantly a reason for being.

A place's *raison d'être* should not be introduced from the outside through a forceful intervention. There are many occasions where factory towns and the likes have been the sole generators of development for a location, but for a town that is downturned it may not be the most sensitive or practical solution. To make the analogy with the discussion over computers for every person, the question over the approach to development of underdeveloped regions downturned by rural exodus becomes this: does this place need the best possible idealized installation, i.e. a shiny modern factory, or does this place need the most readily available basic infrastructure, i.e. simple shelter for business to occur? To be more Keynesian, what is the minimal gesture required to jumpstart a generator of wealth for a town, i.e. how does a design get the most bang for its buck?

## Nota para arquitectos

...si bien puede ser discutible si es o no es Arquitectura lo que se construye y lo que se hace para resolver la pobreza habitacional, en la forma en que se plantea el problema en nuestros países, de lo que no hay dudas es que en este trabajo hacen falta arquitectos.

La discusión sobre si el producto es o no es Arquitectura puede quedar para momentos mas distendidos, mientras se sigue trabajando.

*[...it may very well be debatable if Architecture is or is not what is built and what is done to resolve habitation poverty, in the form that the problem is planted in our countries, in which there is doubtlessly a lack of architects.*

*The discussion as to whether the product is Architecture or not can fall to more prolonged times, meanwhile, the work continues.]*

Victor Pelli, 1990

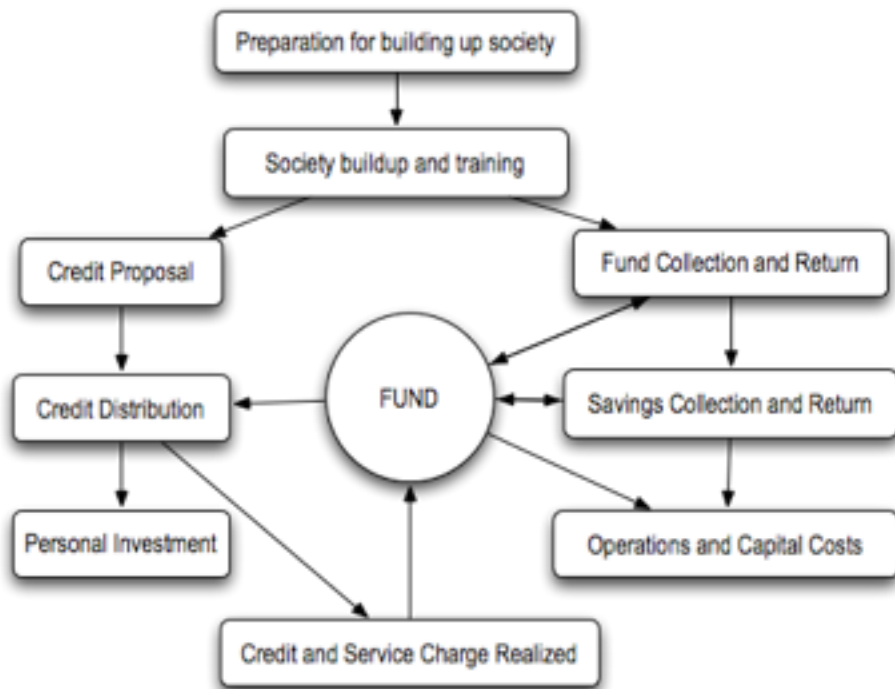


## Role of the Architect

Discussing the role of the architect in the grand scheme of the world is not new, neither is the exploration of the role of the architect in developing areas. Not nearly enough consideration has been given to the role of architecture in the economic development of rural regions, at least when compared to the attention to urban areas. In the specific case of resolving the problems caused by the rural exodus in developing countries, it is useful find parallel methods in architecture to incorporate the values of other fields' development practices.

Below is a diagram overview of the standard micro-credit loan process followed by most organizations aligned with the Grameen Bank philosophy. This structure has proven extremely effective but is not specific to any developmental strategy.

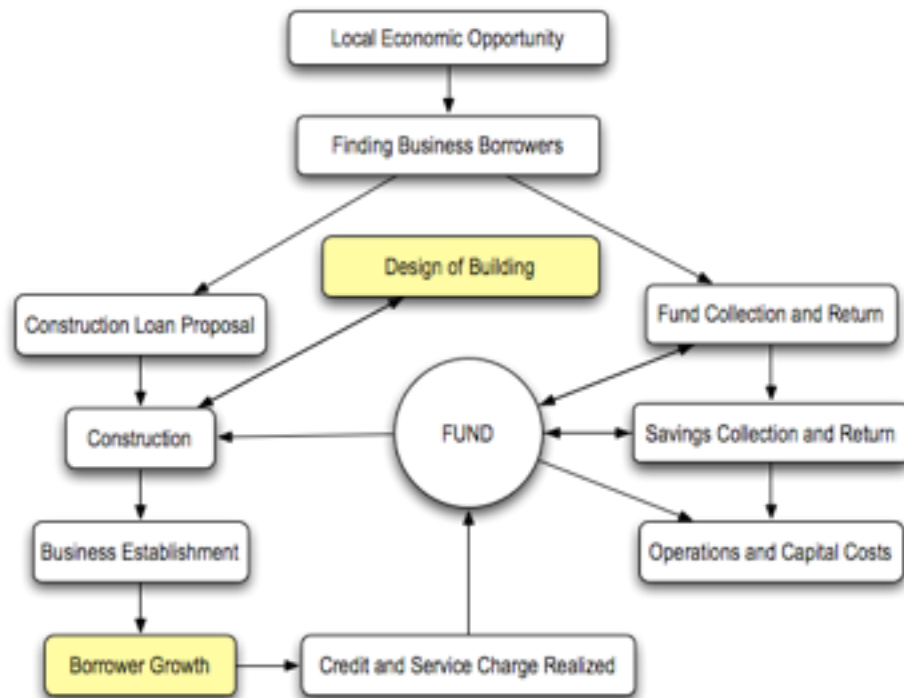
### Microcredit Structure



5. Standard microcredit structure

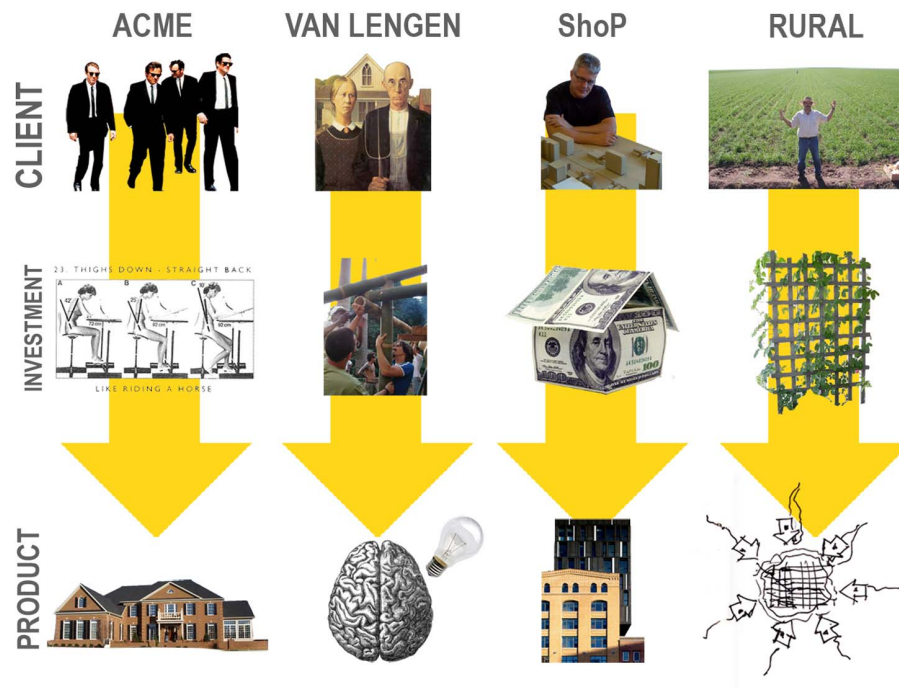
This second diagram is my initial proposal for a micro-development process that is sparked by an architect's initiative and produces financial and personal growth for the borrower as well as profits for the investor architect.

## Microdevelopment Structure

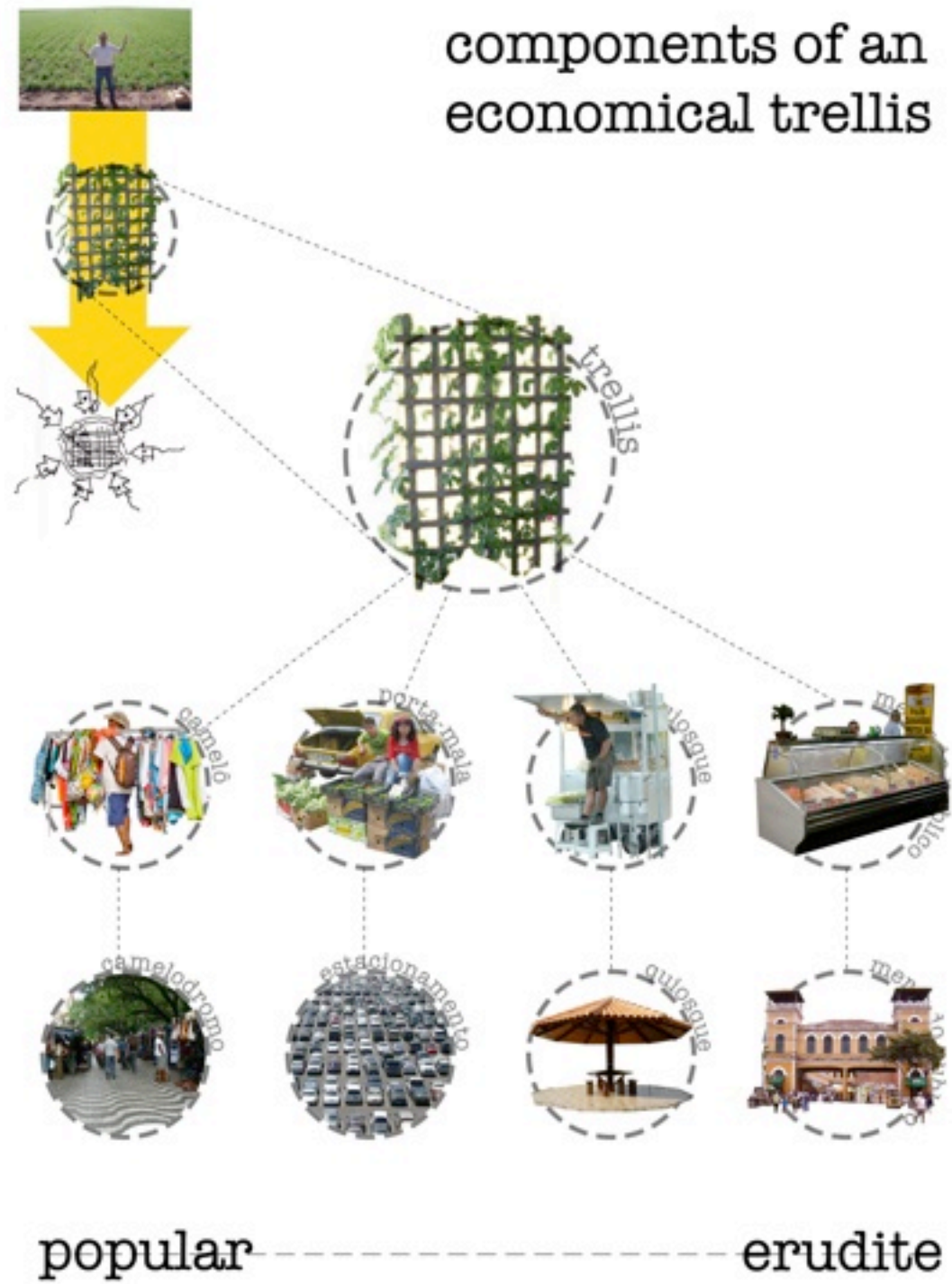


6. Modified microcredit structure accounting for design

Below is a diagram comparing four different approaches to design within the architectural profession. It is useful to examine current thoughts on the role of architects when trying to determine the architect's role in resolving the socioeconomic problem of the rural exodus.



7. Approaches to the role of the architect



## Targets of Development

This is a set of diagrams translated from Victor Pelli's book *Habitar, Participar, Pertenecer*. They compare two strategies in creating targets for development in socioeconomic levels, primarily in developing countries. I am interested in developing the second proposal as an alternative to the singular target convention of the first diagram.



9. Conventional targets in levels of satisfaction<sup>14</sup>

<sup>14</sup> "Las Metas de Satisfaccion en la Estrategia Convencional", Victor Pelli, *Habitar, Participar, Pertenecer*

The incremental approach is more adapt to my architectural and tectonic goals of my thesis. The possibility of individuals gradually and independently improving their living conditions is the ultimate target for my research.



10. Incremental targets in level of satisfaction<sup>15</sup>

<sup>15</sup> "Las Metas de Satisfaccion en la Estrategia Convencional", Victor Pelli, *Habitar, Participar, Pertenecer*

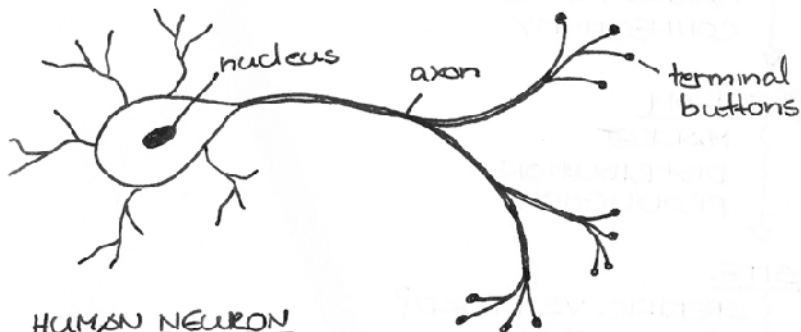
12.11.2008

# URBANIZATION PATTERNS

INITIAL PROPOSAL  
FOR CO-OP


 $\propto$ 

SANTO EG  
PROVINCE TOWNS



## HUMAN NEURON

- ALL-OR-NONE BEHAVIOR
- AXON TERMINAL  $\leftrightarrow$  DENDRITE

TERMINAL (TOWN)



SYNAPSE DENDRITE (CITY)  
TISSUE (LAND)

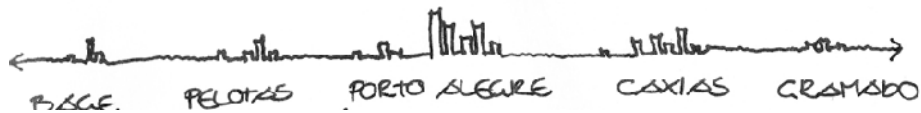
TERMINAL  
BUTTONS

$\neq$

RURAL  
NUCLEI

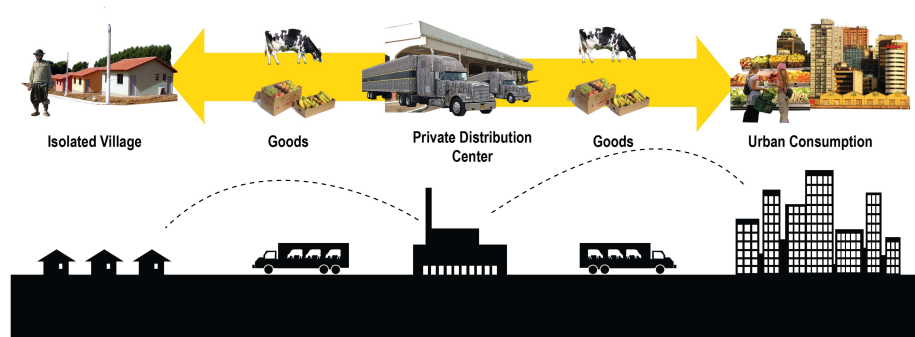


IF NUCLEUS DIES - NEURON DIES  
NEURON DIES - DOMINO EFFECT

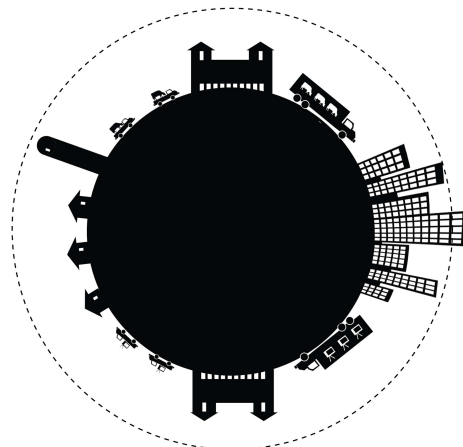
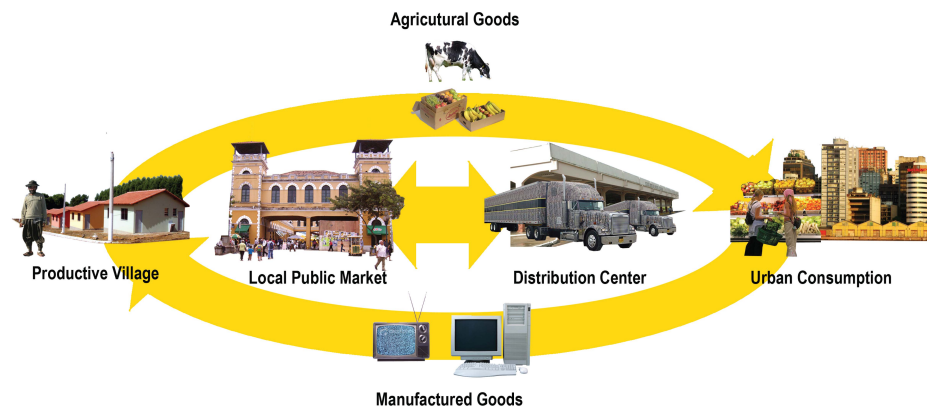


11. Neural synapse and urban patterns

## Procession of Goods



present procession of goods



proposed procession of goods

12. *Present procession of goods*  
 13. *Proposed procession of goods*



## Site Analysis

## The Pentagon's New Map

In my search for world maps and the global situation of development, I came about Thomas P.M. Barnett's The Pentagon's New Map. In his web site <http://www.thomaspmbarnett.com/>, he talks about the risks of Brazil and Argentina:

3) BRAZIL AND ARGENTINA Both on the bubble between the Gap and the Functioning Core. Both played the globalization game to hilt in nineties and both feel abused now. The danger of falling off the wagon and going self-destructively leftist or rightist is very real. • No military threats to speak of, except against their own democracies (the return of the generals). • South American alliance MERCOSUR tries to carve out its own reality while Washington pushes Free Trade of Americas, but we may have to settle for agreements with Chile or for pulling only Chile into bigger NAFTA. Will Brazil and Argentina force themselves to be left out and then resent it? • Amazon a large ungovernable area for Brazil, plus all that environmental damage continues to pile up. Will the world eventually care enough to step in?<sup>16</sup>

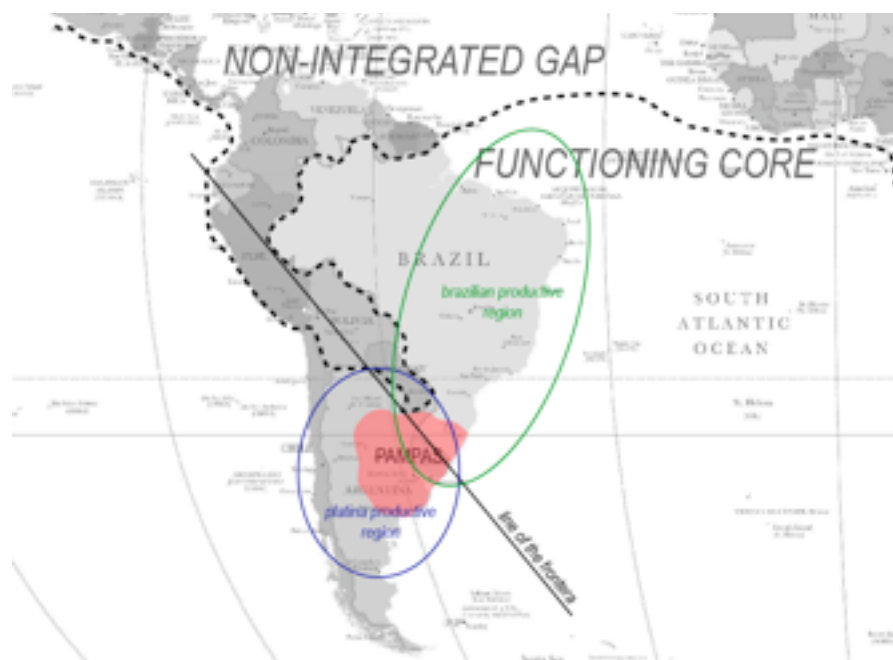
Here is his map (by William McNulty), that delineates the "functioning core" and "non-integrated gap" zones of the world.



In reference to the Amazon, the fact that a country cannot manage its own territory is insulting, regardless of the fact that the administration of the Amazon really is out of control. The way he presents it is reminiscent of the fiasco from about seven years ago when a textbook mapped the Amazon as an international zone. Help is of course welcome, but in non military or territorial means.

The first question referring to the Mercosul, FTA, and NAFTA is valid. South America is divided into two drifting pieces, the leftist underdeveloped northwest and the more developed south. Columbia is an exception in the northwest, so much so that it has negotiated with NAFTA more than any other country in South America. Peru is perhaps the country I've seen the most micro-investment headway.

Taking the "non-integrated gap" map from Barnett's book and coupling it with general regions of high productivity in the continent, the Pampas is evidently the shaft of land that seems to be linking the two "functioning cores" of South America. Considering the richness of the location of the Fronteira (Brazil-Uruguay border region), it is impossible to assume that no development will occur in this region, and it is obviously lacking proper administration since it is sitting between the richest zones of the continent.



15. The Pampas in relation to the Pentagon's New Map

## The Pampas

The state of Rio Grande do Sul and the country of Uruguay share over 700 kilometers of border through the plains of the Pampas. While Rio Grande do Sul's industries become diversified in its mountainous northern regions, the large lower half of the state is dominated by Gauchos and cattle grazing. The nearly identical cultural, economic and climatic characteristics between the two countries along the border, it is a remarkably porous and blurry frontier.



16. Land use in Rio Grande do Sul

The cities along the border between Brazil and Uruguay are very fortunately located. They are approximately 400 kilometers from either Montevideo or Porto Alegre, and about 600 kilometers from Buenos Aires. The towns were founded for their strategic position along trade routes, military positioning, and for the rich grazing lands of the Pampas.



17. Roads of the Pampas and their border towns

## **The Tragic Story of the Public Market of Bagé**

In searching for a program, I looked into the historic patterns of development in Latin America, particularly in the Pampas of Rio Grande do Sul.

The Laws of the Indies established a skeleton for town development in Spanish colonized areas from the 16th to 18th century. Its most notable point was a regular block grid grown from a central open space enclosed by a church, a governmental building, and a public market in most complete cases. The nuclear nature of the cities' souls in these regions are still very evident today and provide many cities with beautiful characteristic and vital spaces.

In the case of Bagé, I am personally affected by the history of these spaces. The city developed around two main public squares - the colonial square flanked by the onion-domed cathedral, and the newer square originally flanked by the public market built in 1862 (as pictured below). My grandfather moved from Brummana, Lebanon, to Bagé in 1935 and opened a textile shop in one of the doors of the public market. Eventually he moved his store to the north side of the square out of the market. In 1953, the city, under Mayor Carlos Kluwe, decided to demolish the market citing the need for the city to grow and the lack of funds for the municipal government. In the place of the market were built a hotel and an office building, while a third building was never fully finished, rebar and all still exposed. The last vestige of the market is the street corner clock, pitifully dominated by a 1960s hotel building.

## Contraband in Aceguá

In Google-ing for Aceguá, I found a news article - perhaps the only news ever coming from Aceguá- that happened on the same day that I was there taking pictures and video and being interrogated by the look-outs. Turns out the same contraband group that I caught on camera was caught some miles down the highway with over five tons of contraband Brazilian fruits and vegetables. It looks like I should stay away from Aceguá for a little while, or at least go in a different car, so that they don't blame me for their capture... Here is the original news feed<sup>17</sup>:

### **Uruguai apreende contrabando brasileiro de frutas e verduras**

2008/12/26

MONTEVIDÉU (AFP) — Funcionários da Alfândega uruguaia apreenderam nesta sexta-feira mais de cinco toneladas de frutas e verduras produzidas no Brasil e que entraram ilegalmente no Uruguai, informaram autoridades.

A apreensão ocorreu na região da fronteira com o Brasil, entre as cidades de Melo e Aceguá, a cerca de 400 km de Montevideu.

No total, foram apreendidos 5.400 quilos de batatas, cenouras, mangas, mamões e bananas, acondicionados em caixas sem identificação do produtor ou importador, como determina a legislação uruguaia.

Segundo a Alfândega, o contrabando entrava no Uruguai transportado por motos, do território brasileiro, e era distribuído entre diversos varejistas.

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<sup>17</sup> "AFP: Uruguai apreende contrabando brasileiro de frutas e verduras." Google. 26 Dec. 2008.

and translated:

**Uruguay captures contraband of Brazilian fruits and vegetables**

2008/12/26

MONTEVIDEO (AFP) — Uruguayan customs workers apprehended this Friday more than five tons of fruits and vegetables produced in Brazil and illegally entered into Uruguay, inform authorities.

The apprehension occurred in the frontier region with Brazil, between the cities of Melo and Aceguá, about 400 km from Montevideo.

In total, there were 5,400 kg of potatoes, carrots, mangoes, melons, and bananas in boxes with no identity of producer or importer, as is required by Uruguayan legislature.

According to customs, the contraband entered Uruguay by motorcycles, from the Brazilian territory, and were distributed to diverse vendors.

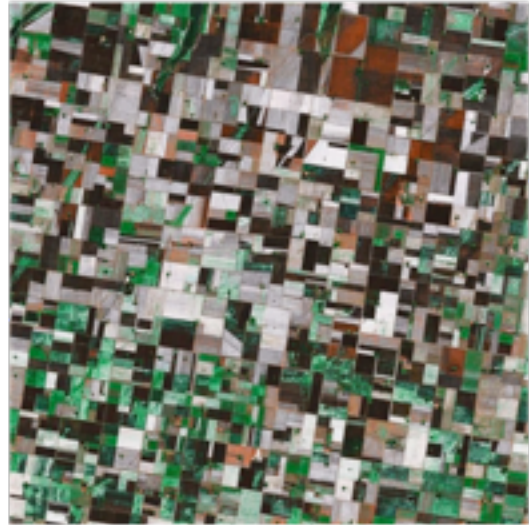


## The Land of the Pampas

In looking through aerials of the Pampas and examining how the cities meet the landscape meet agriculture, one begins to find some mesmerizing patterns of land use. Here are a few frames at the same scales<sup>18</sup>:



Rio de Janeiro, Brazil



Mendoza, Argentina



Colombia, Brazil



São Paulo, Brazil

18. Aerials of lands of the Pampas

<sup>18</sup> Google Earth. Computer software. Vers. 4. Web.

## The Towns of the Pampas

Here are four different situations, at equal scales, of the city edge meeting the rural landscape<sup>19</sup>:



Armstrong, Argentina



Alagoin, P.R., Brazil



Fátima, P.R., Brazil

19. Urban patterns of Pampa towns

<sup>19</sup> Google Earth. Computer software. Vers. 4. Web.



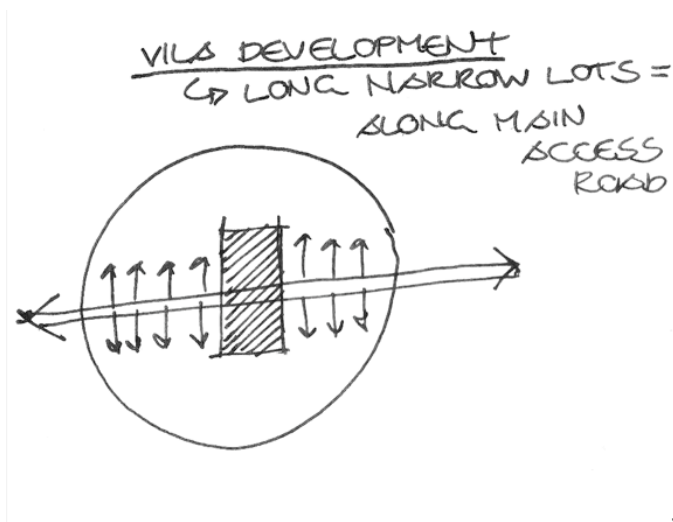
The Pampas of Argentina are much more rigidly and thoroughly developed than those of Uruguay and Brazil. The general form of the cities is evident in the following pictures of the Province of Santa Fé, between Córdoba and Rosario in the northeastern region of Argentina<sup>20</sup>.



20. *Towns of the Province of Santa Fé*

<sup>20</sup> *Google Earth*. Computer software. Vers. 4. Web.

Below is Armstrong, Argentina. It is situated approximately five kilometers from other towns of similar size and organization along the same freeway. The city is centered on an agricultural trade area along the freeway, and the city has expanded outward from there. The city and the crops actually meet abruptly along the streets and lot divisions, showing a maximum use of land in the area.



21. Armstrong, Argentina



## ***A Fronteira - Cities on the Border***

Here are aerials of different dry-land border cities . The first three are cities along the Brazil-Uruguay border. All these cities have grown around the border, just as many cities grow along a main axis. They are arranged them from most to least "border-developed".

Rivera is the best known free trade zone in the Gaucho border. Its main source of income has been the tax-free shopping, so much so that after going into a Uruguayan cafe for a soda, the owner said, "Gracias, buenas compras!"



*22. Rivera and Santana do Livramento*

Xuí is the southernmost city in Brazil. It is the final stop before Uruguay for those traveling along the Atlantic coast of Brazil. Much like Rivera, it has developed along its major commercial avenue that sits on the Brazil-Uruguay border. The Avenue is the center of their own free trade zone.



23. *Xuí*

Aceguá is also on the border between Brazil and Uruguay, about sixty kilometers south of Bagé. It did not have a free trade zone and has been very underdeveloped in its urban quarters. Its most successful developments are actually many miles outside the urban zone in the form of co-ops and horse farms. In 2007 the free trade zone was announced in the city and there is speculation that the city will turn into another shopping area for Brazilian Gauchos. So far, it is a distribution point for smuggled produce into Uruguay.



24. *Aceguá*



Just for the sake of comparison, here is Tijuana. The severe cut between the US and Mexico is such a stark contrast with the seamless border between Brazil and Uruguay that one must wonder how this "fronteira" has not been exploited more thoroughly yet.



25. *Tijuana*

## Notes on *Notes on the Synthesis of Form* by Christopher Alexander<sup>21</sup>

From the offset of my search for a solution to rural development problems, I have sought a humanist point of view about the individual's ability to control his or her destiny with the least intrusion by my product. At the root of my objective to avoid meddling in the decisions of an individual is the balance between interpreting a situation that I am not the most familiar and using education to facilitate its solution.

*“What does make design a problem in real world cases is that we are trying to make a diagram for forces whose field we do not understand.”* (p. 21)

We are led to believe that academic research can educate us about all that is necessary to solve problems like the rural exodus and poor living standards for the lower classes while making beautiful places. Yet, there are far too many minute and personal complexities that will inevitably fall through the cracks of the filter with which the designer makes form.

*“I shall call a culture self-conscious if its form-making is taught academically, according to explicit rules.”* (p. 36)

In a developing world that is transitioning from vernacular methods of Alexander's unselfconscious process to the first world's individualistic inclination, the relationship between the designer and dweller (regardless if they are the same or different persons). Specifically in Latin America, the ideals of individualistic societies of the Western World are particularly and deeply rooted in the community developments and form-making process of its societies. In the grazing lands of the Pampas, the gaucho perhaps epitomizes the idea of the rugged individual conquering the land and creating space with his bare hands from scratch – much like the North American cowboy of the Manifest Destiny. From this nearly anarchical process of land claims has come one of the strongest and most stubborn cultures of independent life and self-empowerment.

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<sup>21</sup> Alexander, Christopher. *Notes on the Synthesis of Form*. Cambridge: Harvard UP, 1964. Print.



*“The form-maker’s assertion of his individuality is an important feature of self-consciousness.” (p. 57)*

Regionalist theory bred by Bernard Rudofsky, Hassan Fathy, and Amos Rapoport has concentrated on the vernacular approaches to building dwellings and the interactions between them that are integral to the form-creating strategy of a particular structure.

*“We know by definition that building skills are learned informally, without the help of formulated rules.” (p. 46)*

Alexander points out the formalization of form-making as a creation of a self-involved cycle of academic study that may trickle down eventually to the vernacular of a place, although it is in reality more likely to cling to high-style design instead.

*“The academies are formed. As the academies develop, the unformulated precepts of tradition give way to clearly formulated concepts whose very formulation invites criticism and debate.” (p. 58)*

It is inevitable that the educated elite formalizes the design process to the extent that it becomes intellectual masturbation with few tangible results. The “criticism and debate” in the academic circles rarely trickles down far enough to reach the individual home builder-dweller. Hassan Fathy was one of the first to experiment with passing on information to the individual in an attempt to join the experience of vernacular form-making and technical training of an architect. He suffered far many more difficulties than he could have imagined, as he made clear in his book. He was not greeted as a messiah of design but instead with much resistance. In broad studies of societal development, regionalist theory has prioritized the human aspect of a man’s connection with the material construction of his property.

*“Closely associated with this immediacy is the fact that the owner is his own builder, that the form-maker not only makes the form but lives in it. Indeed...there is a special*

*closeness of contact between man and form which leads to constant rearrangement of unsatisfactory detail, constant improvement.”* (p. 49)

Vinicius de Moraes and Chico Buarque wrote a song in 1969 about the humble people that are Brazil’s lower class. They are portrayed as a people, a community that defines the identity of its individuals, a societal structure losing its influence in most of the developing world as access and wealth bring with it more power to consumption, financial and material growth, and pride. The studies of regional architecture concentrate on the small or individual increments of design improvements, but in fact observe the process of individual design as only a step in a societal evolution of form. Alexander talks about individual pride of design as something essential to architects but that has become a part of every person in self-conscious societies.

*“In present design practice, this critical step, during which the problem is prepared and translated into design, always depends on some kind of intuition.”* (p. 77)

Pride brings with it confidence and with that an individual takes more assurance in intuition. Perhaps the intuition of form making is actually the informal education of vernacular building techniques, but there is an interesting and charming amount of pride that comes with arbitrary design decisions. The gaucho raises his own cattle, pours his own mate, builds his own house, and makes his own decisions about every aspect of his life. He wants no interference from a “design-expert” because they are not experts of the gaucho’s life.

*“Each form is now seen as the work of a single man, and its success is his achievement only.”* (p. 59)

As a stubborn gaucho myself, the unwritten rules of our people include never interfering in a man’s life unless one is called upon for help since we are all brothers, otherwise we are risking a brisk knifing (verbal or literal). I am also part of the intellectual elite and have a very unstable place in determining form making in the pampas. In this situation Johan Van Lengen may have found the most effective strategy to implement

education to the people at need with his book *The Barefoot Architect*. His book was first published in Mexico in 1982 and was distributed to thousands of public libraries to provide locals with a manual for basic construction techniques.

Alexander goes into depth in the second half of *Notes on the Synthesis of Form* about diagrams and process of design in regards to the communication of form design and form making.

*“We shall call a diagram constructive if and only if it is both at once – if and only if it is a requirement diagram and a form diagram at the same time.”* (p. 87)

In my proposal to establish a village of small agricultural workers through self-help processes, the power of suggestion through visual communication and the providing of access are the primary advantages of the professional to provide help to the individual in his building of a home, workplace, and income source.

*“...the building of a house is a ceremonial occasion.”* (p. 47)

The education and preparation of the individual to begin the building of a house are the first phases of the ceremony. The access and to information from a simple pamphlet or manual can significantly improve and facilitate the design and construction of incrementally built structures that will provide for the small businesses of the rural developing world. The principles of Van Lengen’s book can be edited and extrapolated to capitalize on a specific site’s opportunities and eccentricities. In essence, access gives the individual the power to incrementally solve his design problems to satisfy his needs as he and only he sees fit.

# **“Gente Humilde”**

Chico Buarque and Vinicius de Moraes

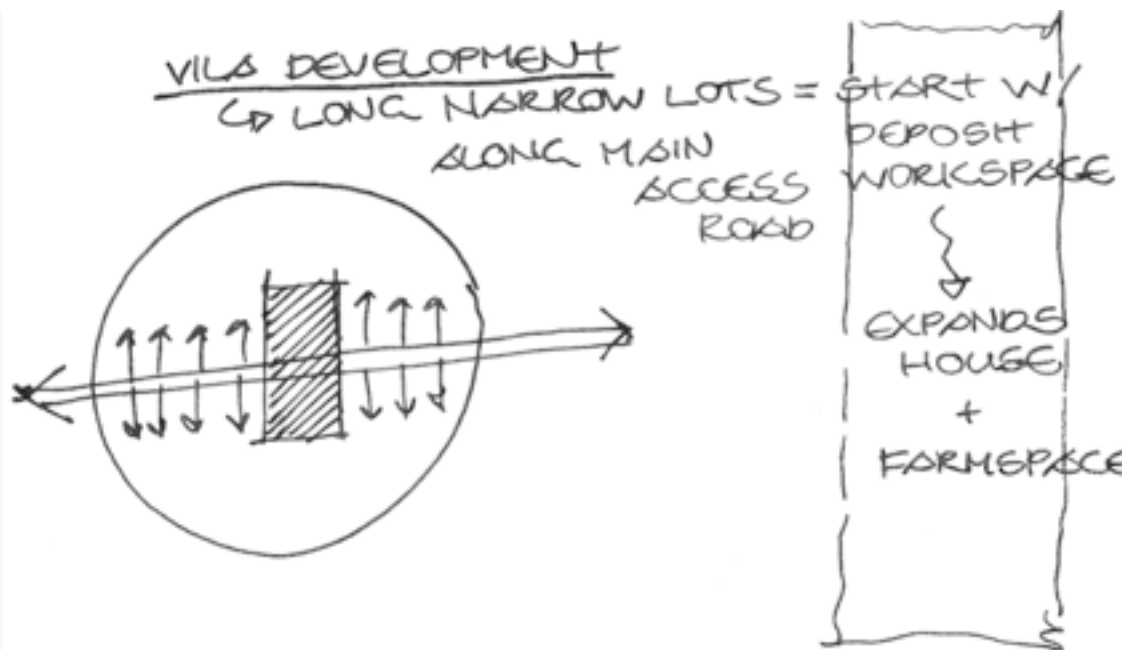
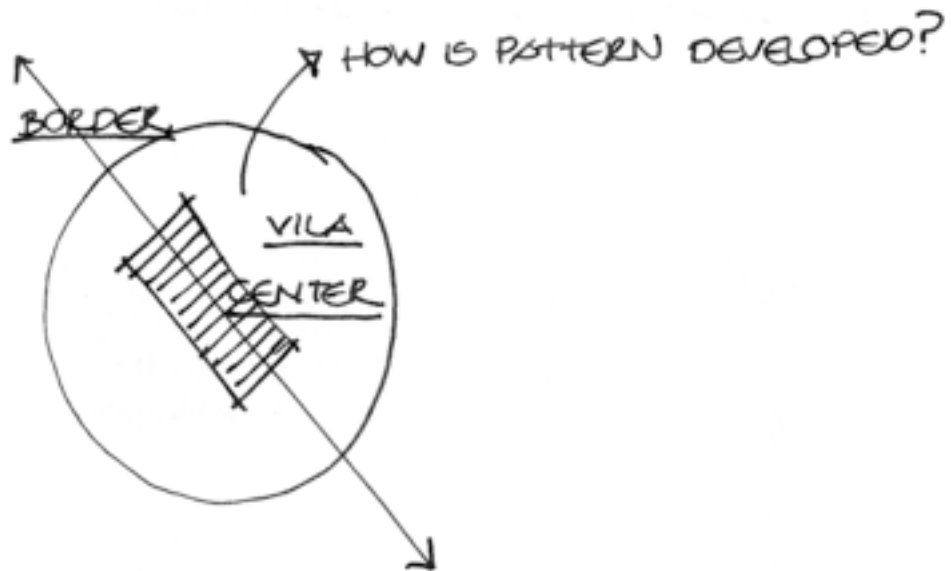
Tem certos dias  
Em que eu penso em minha gente  
E sinto assim  
Todo o meu peito se apertar  
Porque parece  
Que acontece de repente  
Feito um desejo de eu viver  
Sem me notar  
Igual a como  
Quando eu passo no subúrbio  
Eu muito bem  
Vindo de trem de algum lugar  
E aí me dá  
Como uma inveja dessa gente  
Que vai em frente  
Sem nem ter com quem contar

São casas simples  
Com cadeiras na calçada  
E na fachada  
Escrito em cima que é um lar  
Pela varanda  
Flores tristes e baldias  
Como a alegria  
Que não tem onde encostar  
E aí me dá uma tristeza  
No meu peito  
Feito um despeito  
De eu não ter como lutar  
E eu que não creio  
Peço a Deus por minha gente  
É gente humilde  
Que vontade de chorar

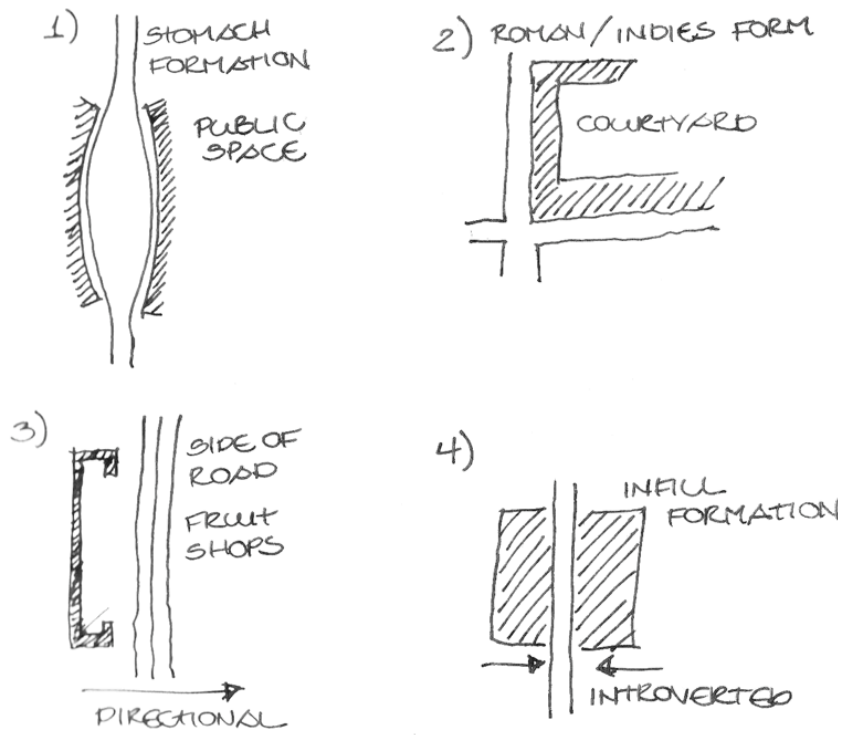
There are certain days  
When I think of my people  
And I feel like  
All of my chest tightens  
Because it seems  
That it happens suddenly  
Like a desire to live  
Without being noticed  
Just like  
When I pass by the suburb  
Myself very well  
Coming by train from somewhere  
And then I get  
Like an envy of these people  
Who go along  
With no one to hold on to

They're simple houses  
With chairs on the sidewalk  
And on the façade  
Written above that it's a home  
On the veranda  
Sad flowers and pots  
Like a happiness  
That has no place to lean  
And then I get a sadness  
In my chest  
Like a disappointment  
That I have no way to fight  
And I that don't believe  
Ask to God for my people  
They're humble people  
What a longing to cry

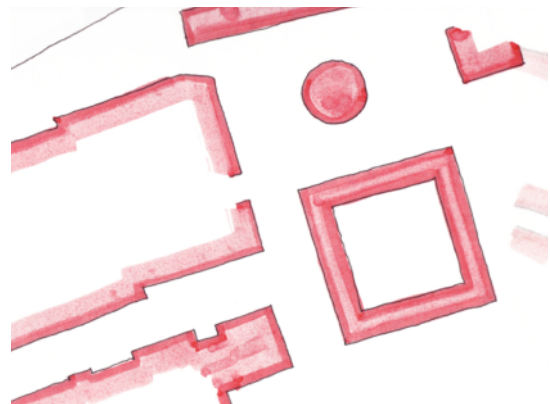
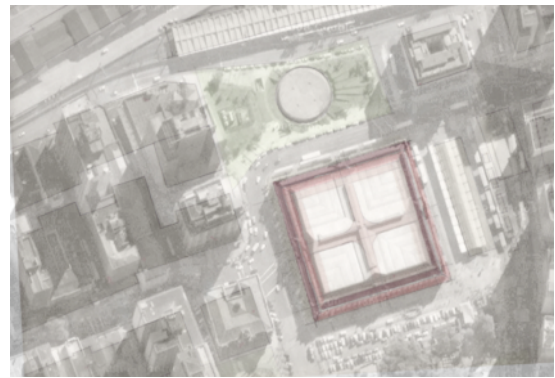
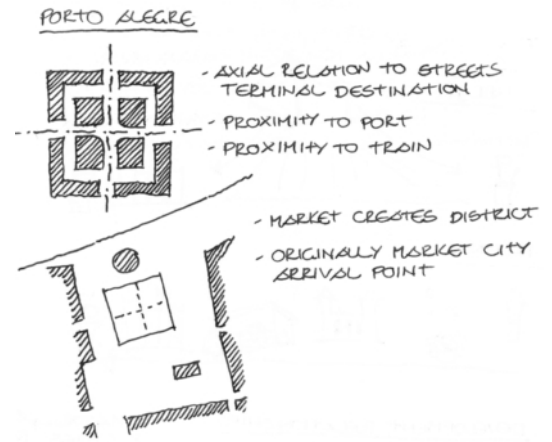
## Program Studies



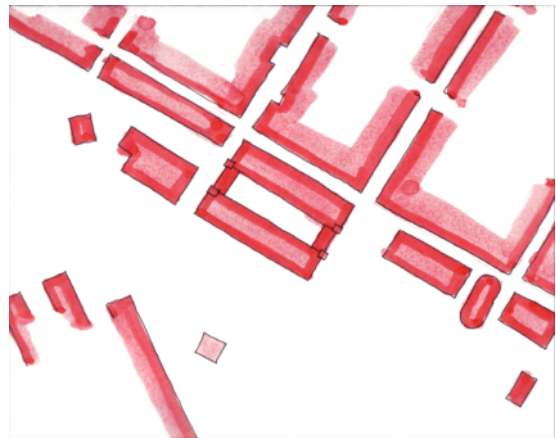
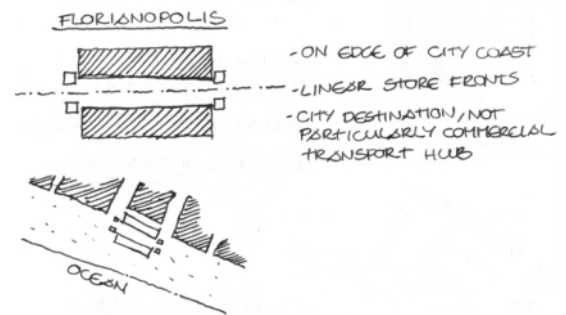
## Designing the Marketplace



## Mercado Publico de Porto Alegre

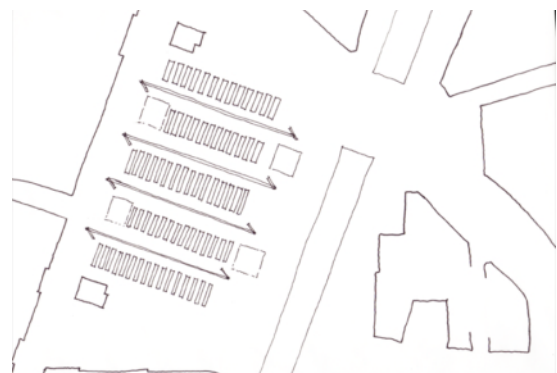
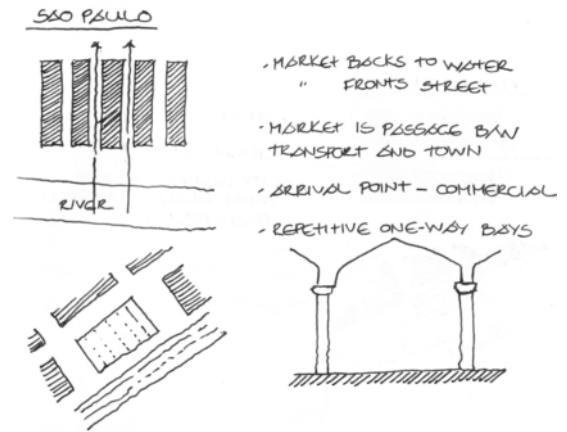


## Mercado Publico de Florianopolis

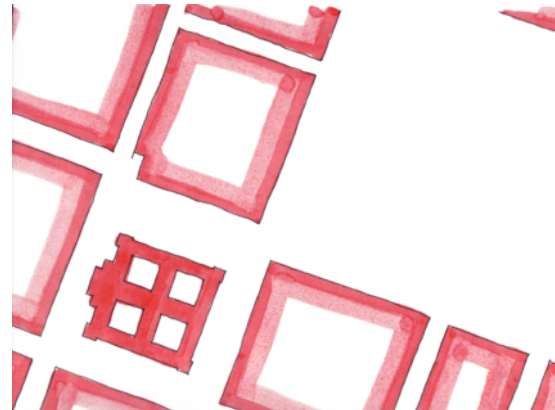
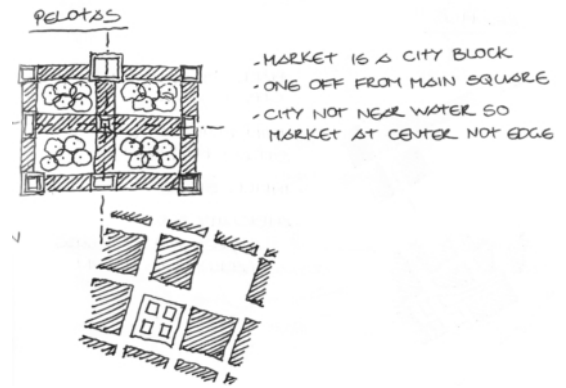




## Mercado Publico de Sao Paulo



## Mercado Publico de Pelotas



## Road Trip Inspirations



32. *The Mercado Publico of Bagé.* The city developed around two main public squares - the colonial square flanked by the onion-domed cathedral, and the newer square originally flanked by the public market built in 1862. In 1953, the city, under Mayor Carlos Kluwe, decided to demolish the market citing the need for the city to grow and the lack of funds for the municipal government. In the place of the market were built a hotel and an office building, while a third building was never fully finished, rebar and all still exposed. The last vestige of the market is the street corner clock, pitifully dominated by a 1960s hotel building.



33. *Site of the Mercado Publico, Bagé, as of 2009.*





34. Small retail shacks along the dividing avenue of Brazil and Uruguay in Rivera/Santana do Livramento. The shacks are on public land originally planned as an open plaza on the dividing avenue between the two countries. That open space has become filled by informal commerce.



35. Permanent “Camelô” stand in Rivera/Santana do Livramento. A typical shack in the free trade zone of Rivera, filled with assorted toys, sunglasses, and small electronics.



36. *Temporary parked retail vehicles in Rivera/Santana do Livramento.* Along the parking area in along the border, lines of hot dog and popcorn stands open umbrellas and daytime retail street without any permanent structures or licenses.



37. *A church within a favela just up the hill from the border avenue in Rivera.* This church stands out as an example of improvised construction and dedication to establishing order outside of traditional and legal regulations.





38. *Principal retail street in Aceguá.* The main street of the city is one block long and terminates on the main park to the south and a steep topographic drop to the north. It offers very little services and goods for the town, leaving its residents to travel to Bagé or Melo for some necessities.



39. *Site of proposed market space as of December 26, 2008.* The site currently only works as a drainage ditch and a buffer space between the Uruguayan avenue and Brazilian avenue.



40. *Monuments to the Two Countries, Aceguá.* The monuments have become a meeting point for produce smugglers transporting goods from Brazil into Uruguay. This picture captures a potato planter selling his produce to the middle man, who will then sell the potatoes to the transporters.



41. *Praça da Alfândega, Porto Alegre, RS, Brazil.* The “Customs Park” is at the old port entrance of the city. It houses dozens of *camelôs*. The pavement uses the Copacabana patterns that are present in most central parks of Brazilian cities. The stands in this picture are now removed in the name of “returning the integrity of the park”.





42. *Street vendor in the Rua da Praia with open kiosk.* The kiosks along the Praça da Alfândega are mostly assembled from carts that can be removed and rolled into storage during the night.



43. *Closed kiosk at the Rua da Praia*





44. *Guarani artisans on the Rua da Praia, Porto Alegre, Brazil.* The Guaraní indians are the natives of the Pampas. They have been virtually all pushed into poverty and onto the city streets as artisans. Their livelihood depends heavily on their woven products.



45. *Praça outside the Mercado Público, Porto Alegre, Brazil.* The street vendors create a canopy of umbrellas and close down a street to create a pedestrian zone in downtown. The vendors in these boxes are not as regulated as the ones inside the market building and are therefore more informal and sometimes offer lower prices.



46. *Brique da Redenção Porto Alegre.* The Brique is an antique and artisan fair in the central park of Porto Alegre. It functions mostly on weekends when vendors line up in regulated kiosks under a canopy of trees and the street is closed to automotive traffic.



47. *Residential apartment building in LAPI neighborhood in Porto Alegre.* The original building facade is barely visible behind the new irregular expansions of garages and shops along the street front. The power of incremental and informal design and growth is inevitable in Latin America. It is nearly impossible to design anything that will not be eventually molded to suit the residents or users.



*48. Fish market during off hours in the afternoon, Rio Grande, Brazil.* The fish market in Rio Grande sits next to the Mercado Publico in the oldest area of the port town. The market is a simple set of columns and pitched roof with tables for fish to be displayed. The shade the market provides along the water is very attractive to older residents to sit, gossip, play checkers, and drink chimarrão.



*49. Public Market, adjacent to Fish Market, Rio Grande, RS, Brazil.* The market building is enclosed and has box doors all around the outer facade. The wide streets between the building and the water are remnants of when the port was filled with boats and carts transporting goods from the sea to the market.





50. Fruit vendors along the freeway between Rio Grande and Porto Alegre. The vendors grow their own produce on their plot of land and sell their goods on a stand along the freeway, usually conglomerating in certain areas.



51. Looking out from a typical box in the Mercado Público of Porto Alegre. The boxes, or shops in the market are packet to the ceiling with goods. Most box owners in the market have been around for at least two generations and have very loyal customers.





52. Boxes in the Mercado Público, Porto Alegre



53. Fruit vendors in the Mercado Público, Porto Alegre



54. *Cart traffic outside main trade building in the CEASA, Porto Alegre.* The cart wheelers are independent contractors, working on a job-by-job basis for vendors by usually transporting boxes of produce from the truck parking area to the market.



55. *Main Building, CEASA, Porto Alegre, RS, Brazil.* The main building has over 400 boxes as designated in yellow paint on the ground. Wholesale vendors can rent as many boxers as they like to sell their goods. The CEASA provides produce for practically all independent grocery stores and restaurants in the Porto Alegre metropolitan area.





56. *Roof of CEASA main building* The curved roof allows for daytime indirect lighting that illuminates the building to the point of not needing a single light bulb during market hours.



57. *Exterior of CEASA main building, parking lot lined with trucks and cart wheelers.*



58. *Typical cart wheeler at the CEASA.* The wheelers wear vests designating them as official independent contractors for hire by any of the vendors of the CEASA.



59. *Designated “boxes” for wholesale fruit vendors.*





60. *Section of CEASA main building.* To the left is the elevated loading dock for trucks to park diagonally. To the right is the interior of the building during market hours. The building's exterior wall is very porous with large rolling doors that open for easy access between the loading dock and the boxes.

## Urban Strategy



61. Present Aerial of Aceguá



62. Edge around the city center



*63. Opportunity areas in city center*



*64. Green space in city center*





65. Green space, infill opportunities, and civic building locations in city center.



## PART I

Gradual opening of construction creates gradient from solid to void spaces

Dark gray area designated rest area, truck zone rotated bus station

market building faces triangular park

kiosk park a continuous structure?

Yellow dot is monument to the border, road can be redeveloped straighter with stronger edge to create grand axis from entrance to monument

Parking will line most streets, creating the edge and transition between road and pedestrian area

Artur Kalil | Update | 03.20.2009

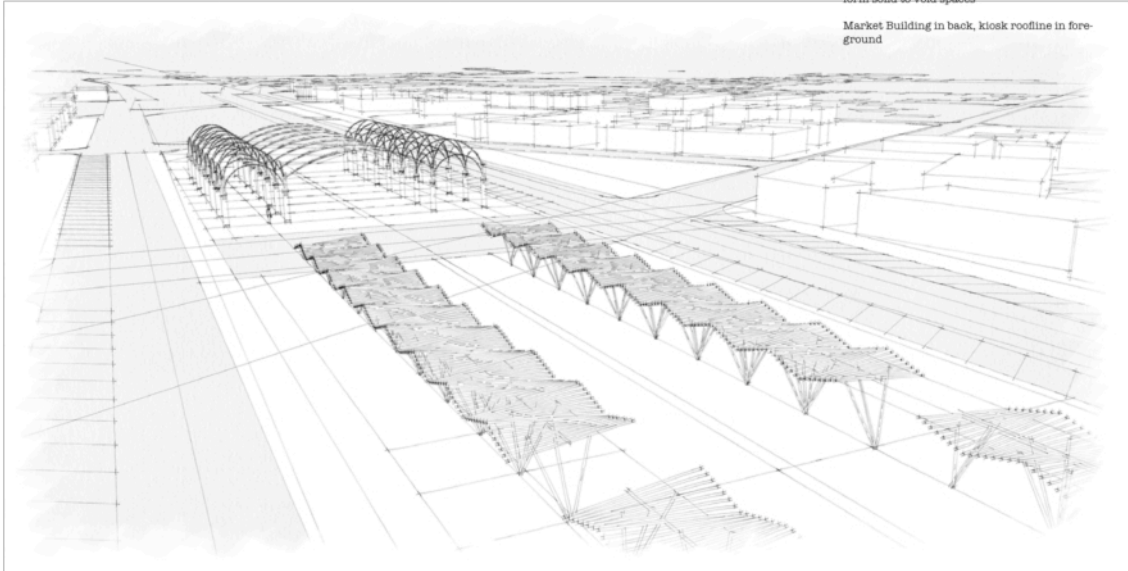
66. Urban parti for intervention in Aceguá

## Market Design

### MARKET PAVILION

Gradual opening of construction creates gradient from solid to void spaces

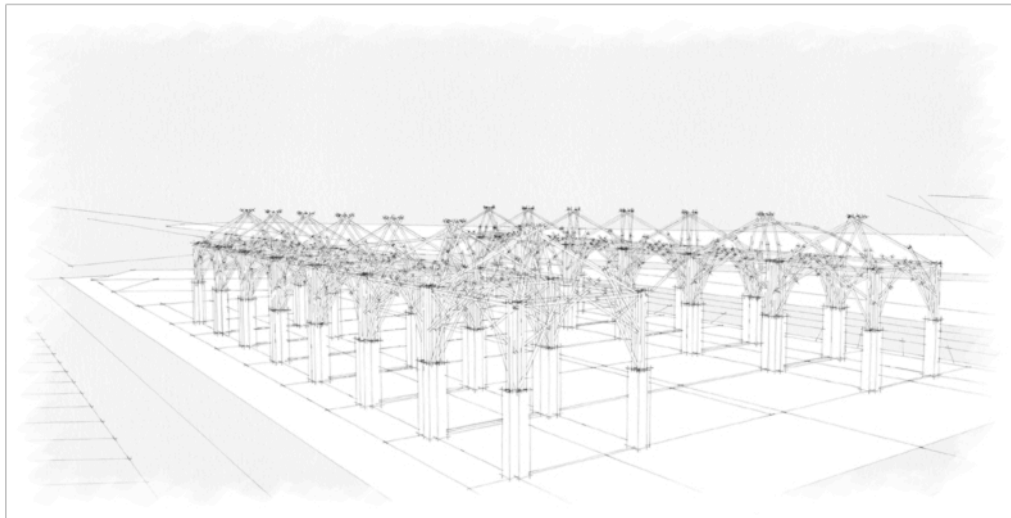
Market Building in back, kiosk roofline in foreground



Artur Kalil | Update | 03.20.2009

### MARKET PAVILION

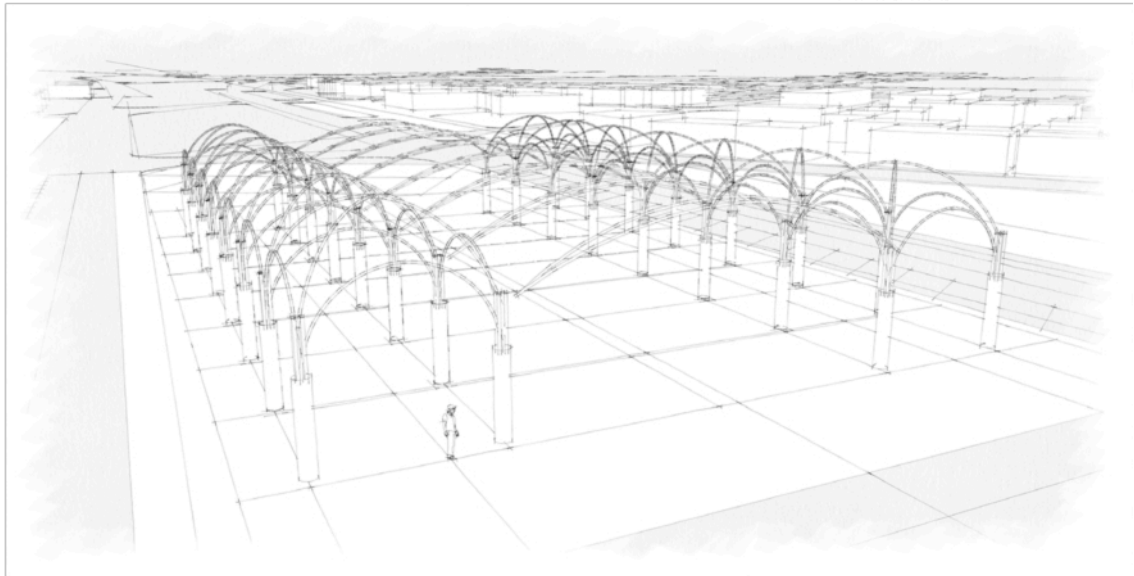
Pyramidal roofing



Artur Kalil | Update | 03.20.2009

## MARKET PAVILION

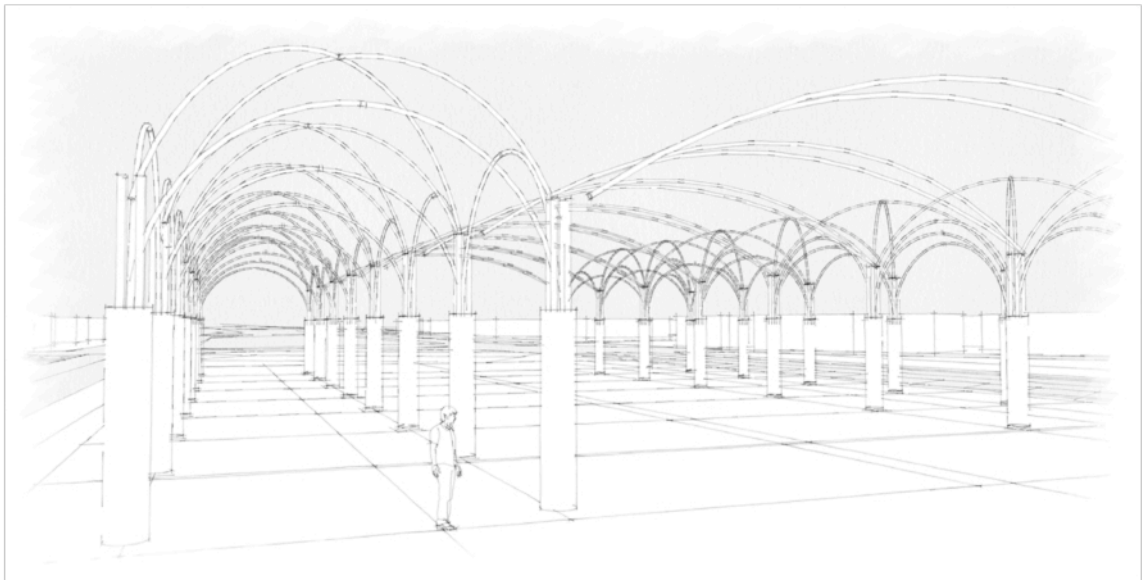
Domed roof structures



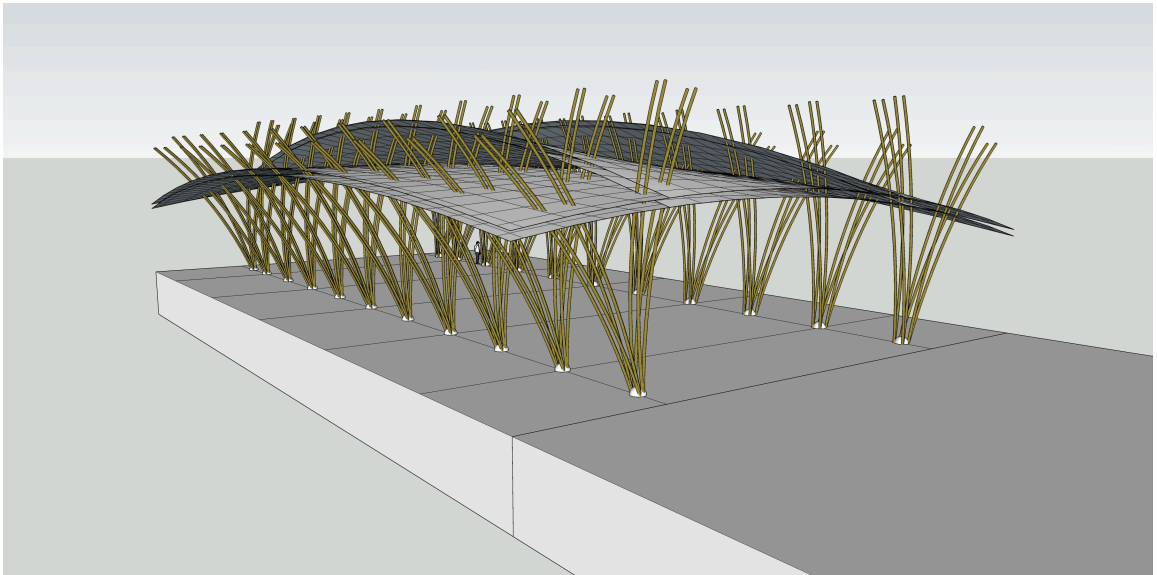
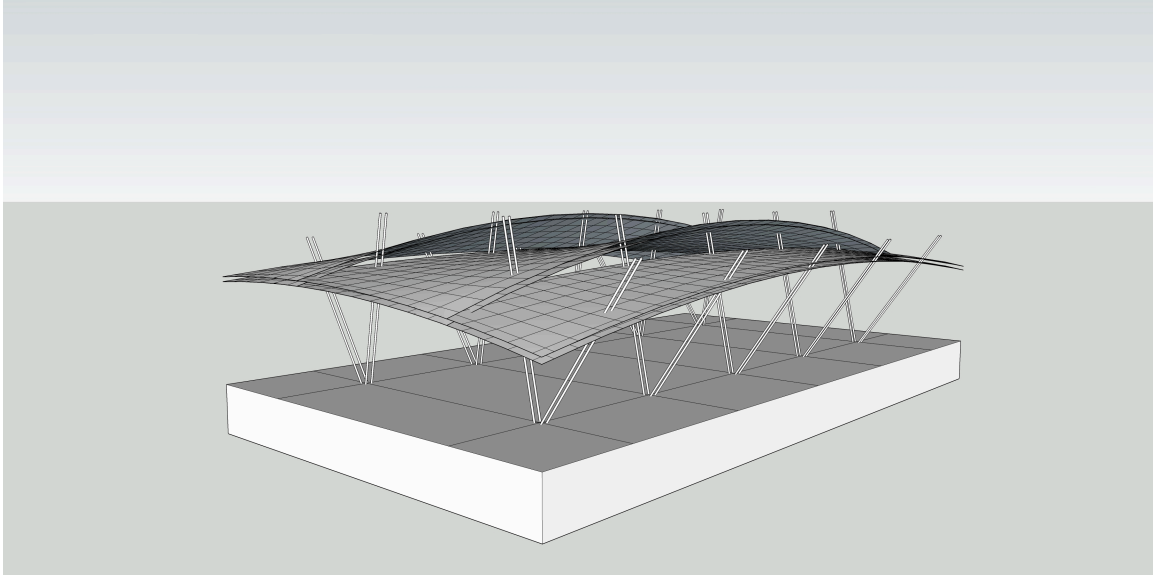
Artur Kalil | Update | 03.20.2009

## MARKET PAVILION

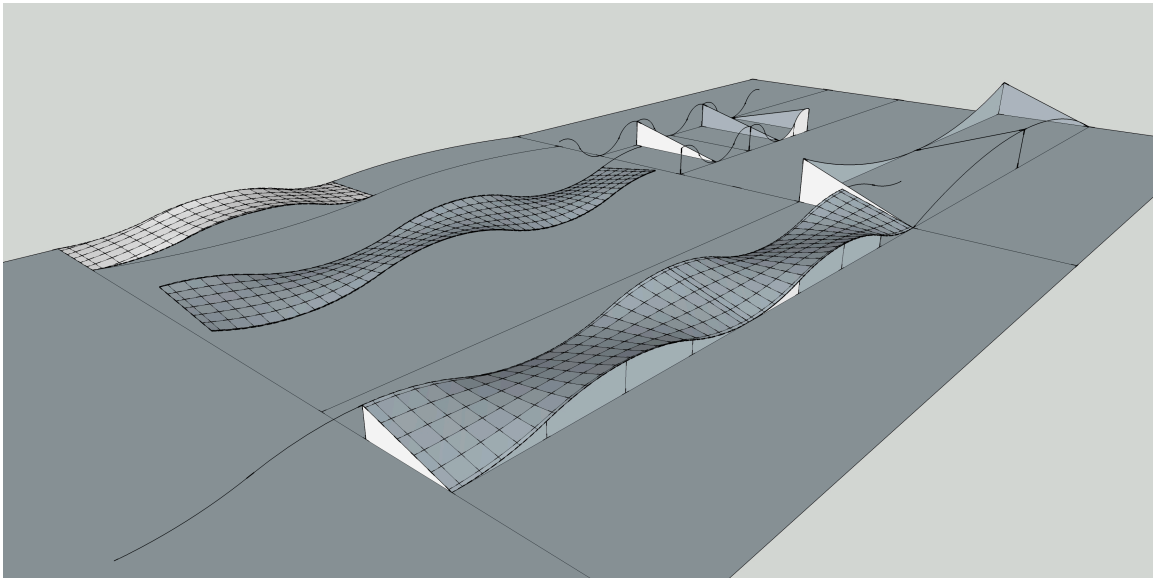
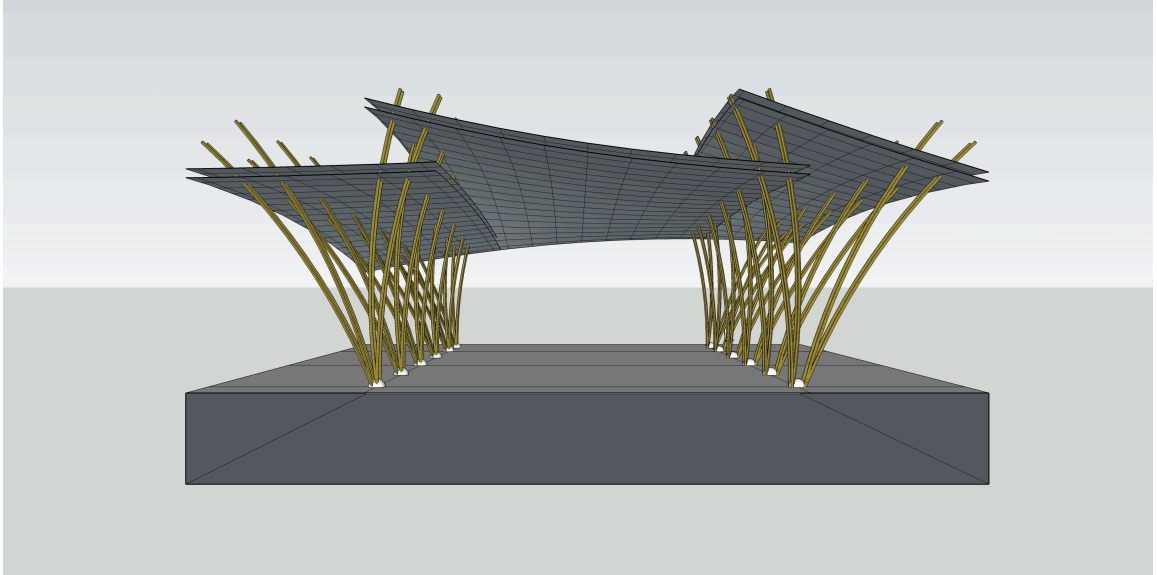
Side Alles, Stoa? Directionality of Market?



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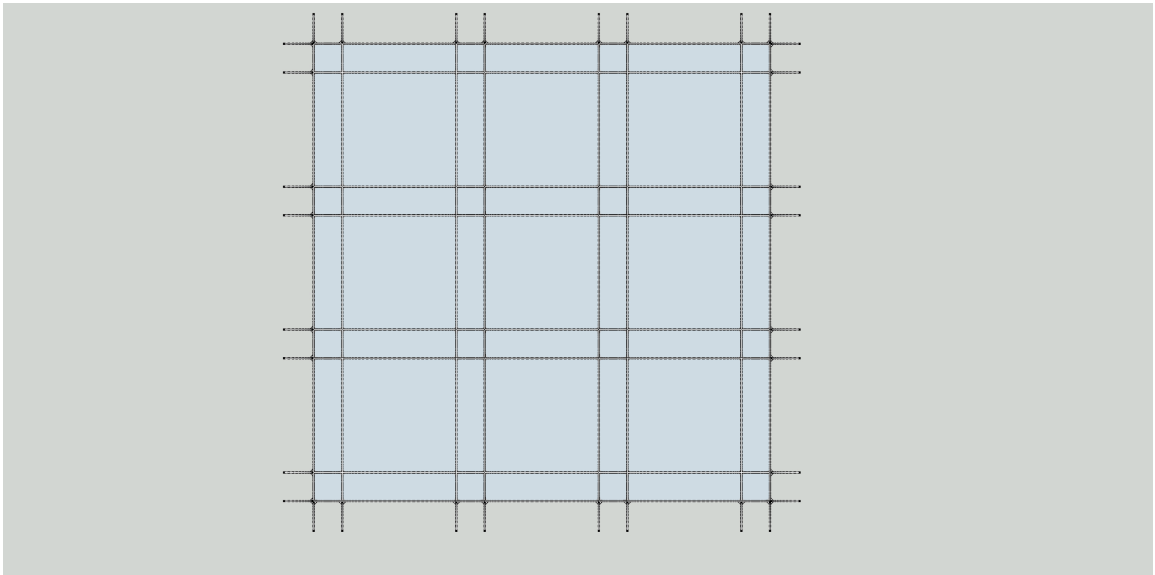
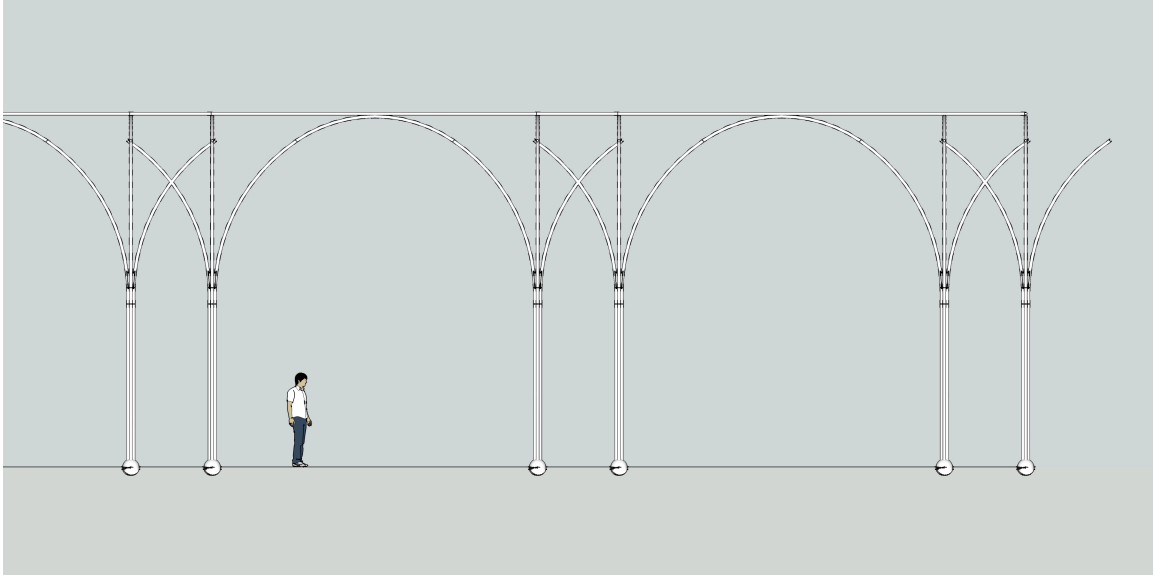


69. Market building form studies

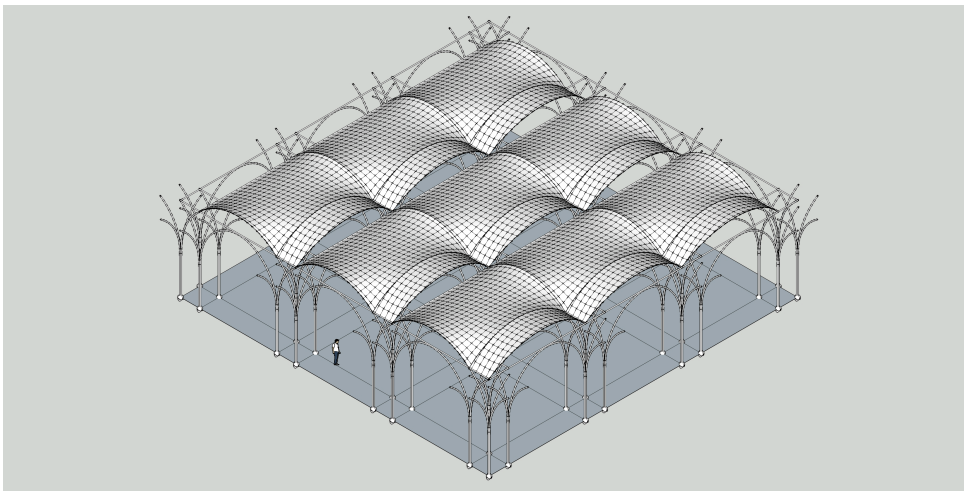
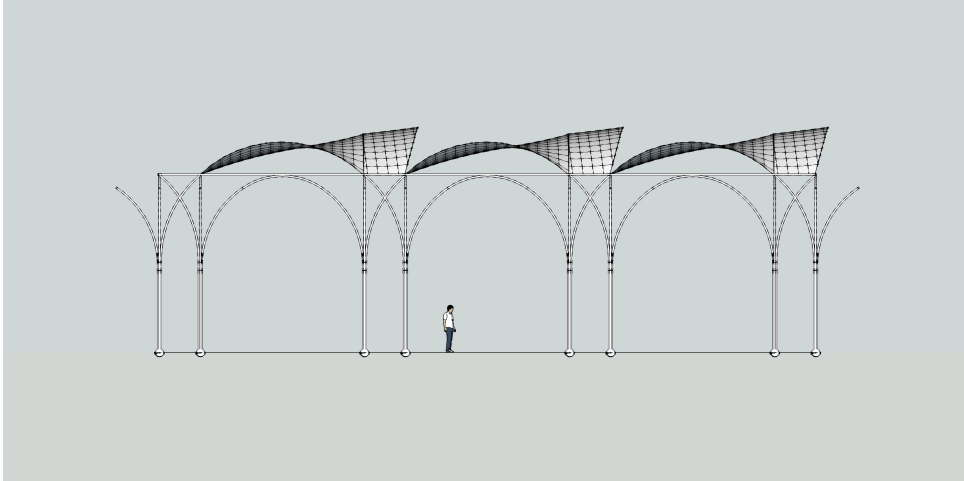


*70. Market building roof shape studies*

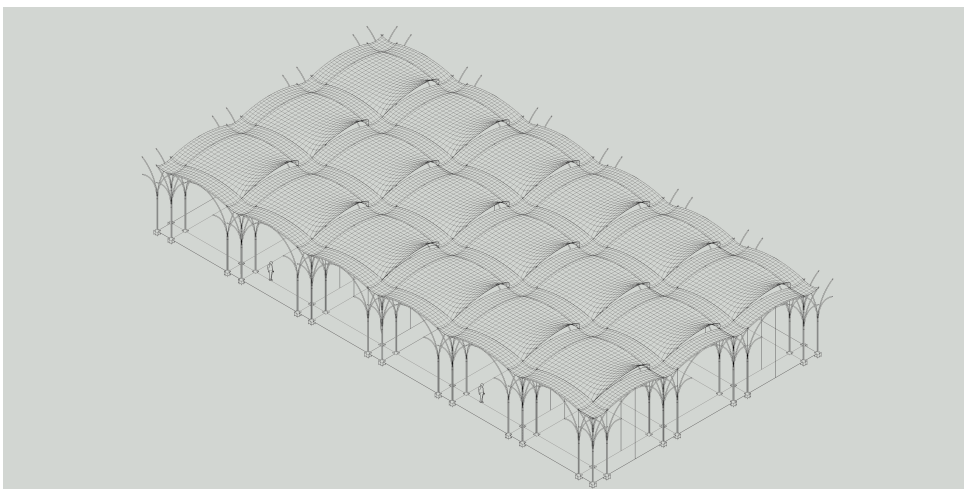




71. Market building process orthographics



72. Market building roof shape process



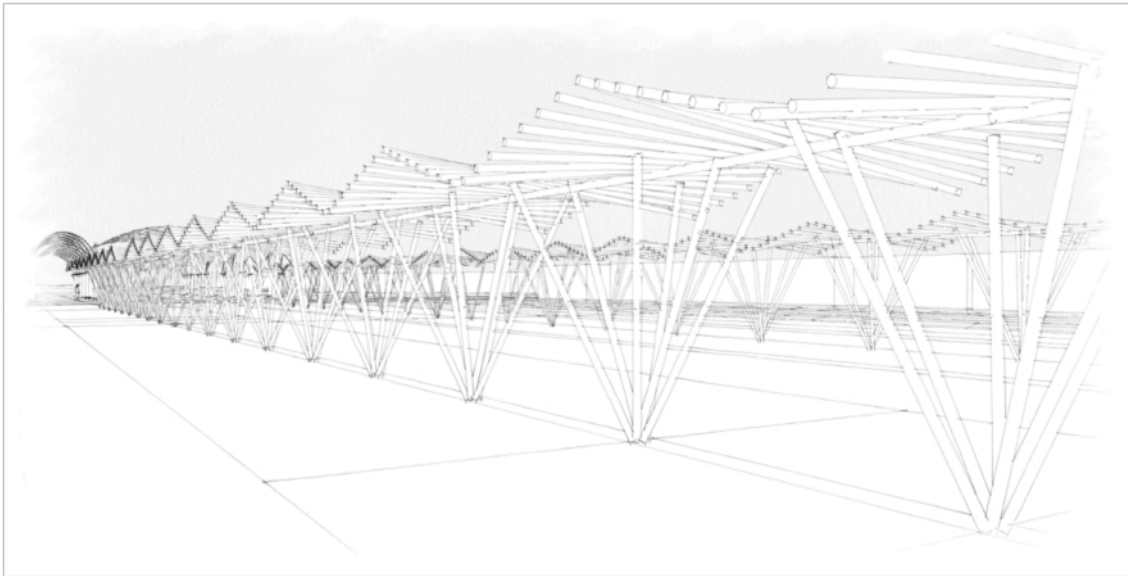
73. Market building axonometric process

## Camelodromo Design

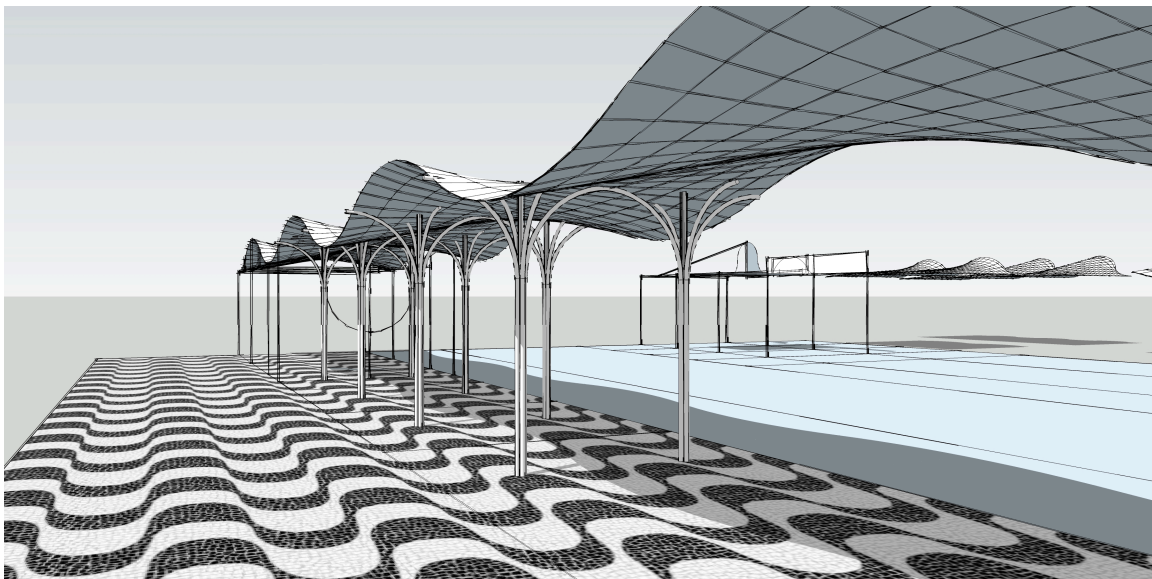
### KIOSK

Continuous structure?  
Just roofing open floor?  
Individual enclosures?

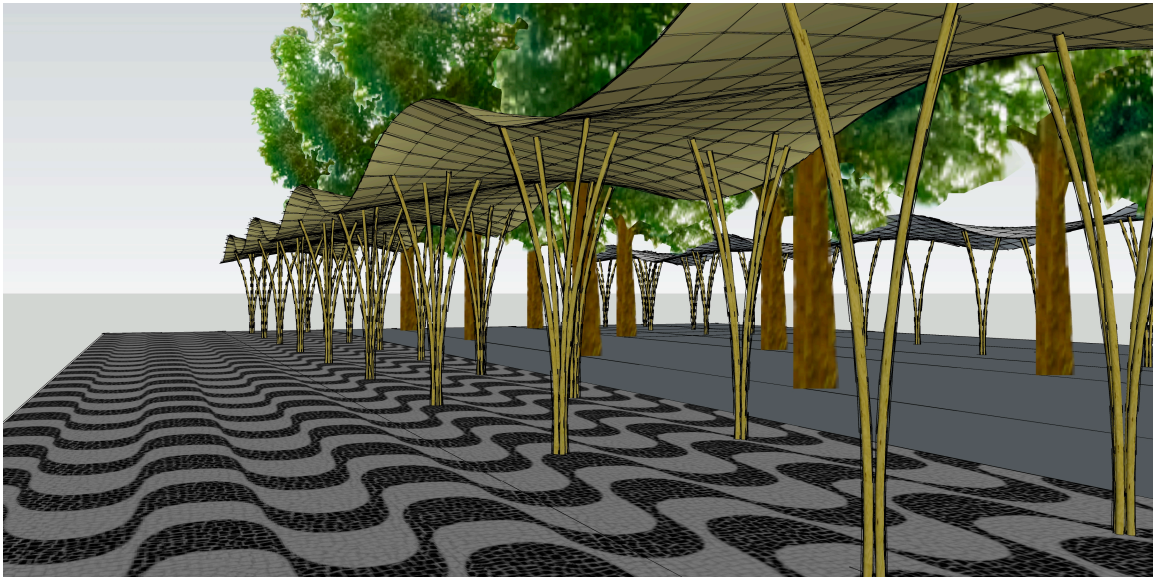
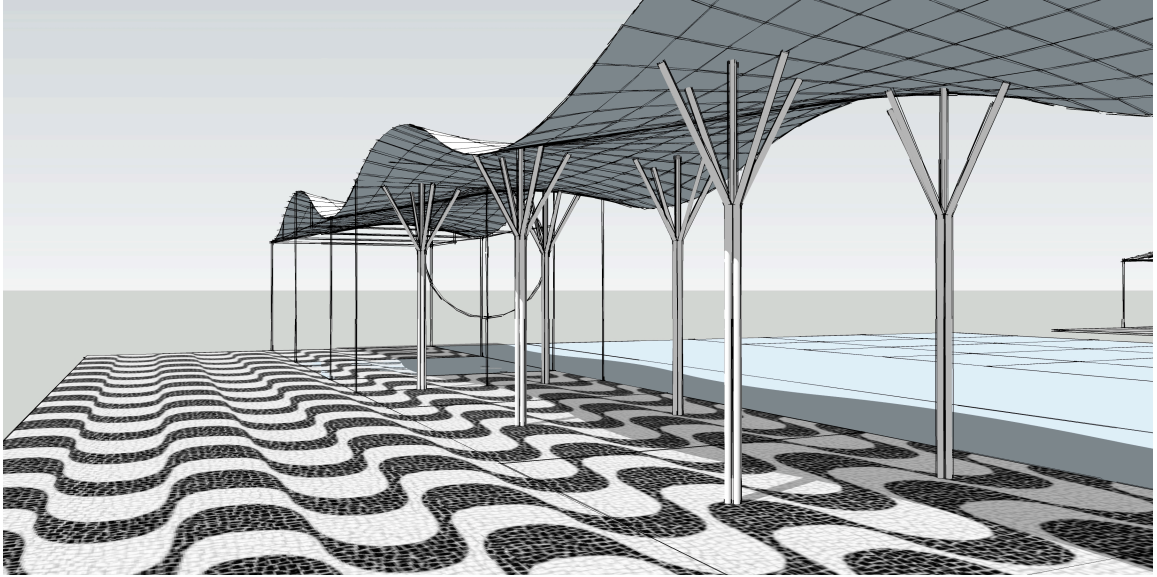
### PARK



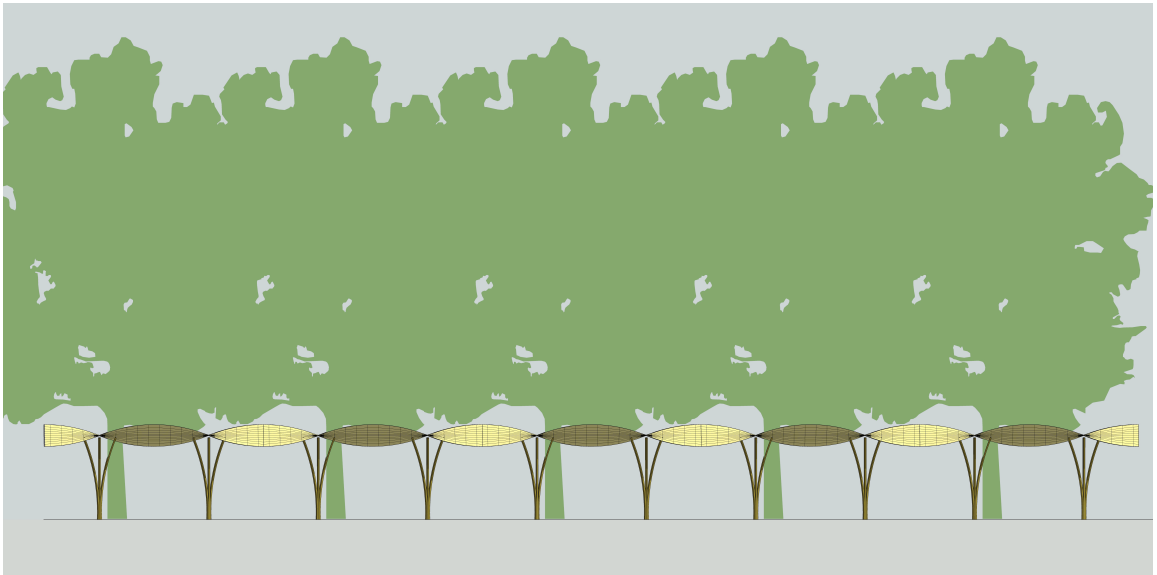
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74. Camelodromo design process



75. Camelodromo material studies



76. *Camelodromo orthographics process*





Uruguay pavement for pedestrian areas



Current Ground condition for roads and pedestrian paths

# MATERIALS

Tiles transition from Uruguay to Brazil  
Street pavings transition to connect pedestrian areas and slow down traffic  
Gradient of hard to soft materials from central area to extended areas



Traditional Brazilian pattern, seen in Copacabana and other public centers, including Bage's main square



Potential Pavement pattern for traffic plaza to bus station and around monuments  
ambiguity for vehicles and pedestrians



General Texture of Portuguese influenced ground tiles



Potential semipervious pavement for parking areas around park zones

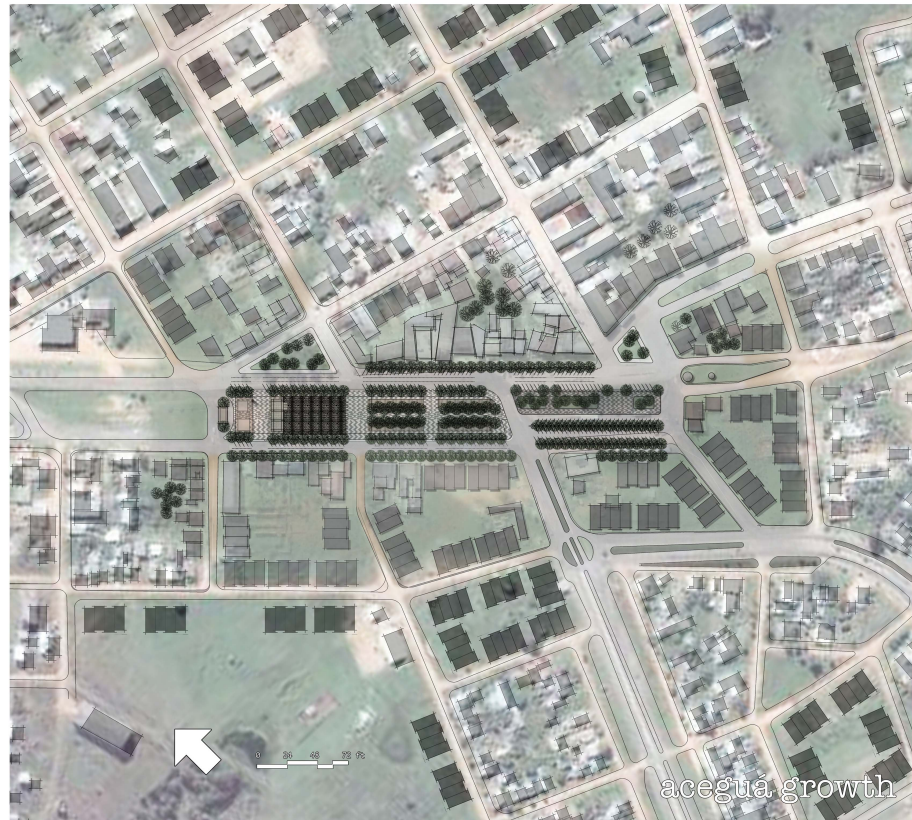
Artur Kalil | Update | 03.20.2009

**Final Boards**



78. Proposed urban plan





79. Urban expansion and infill

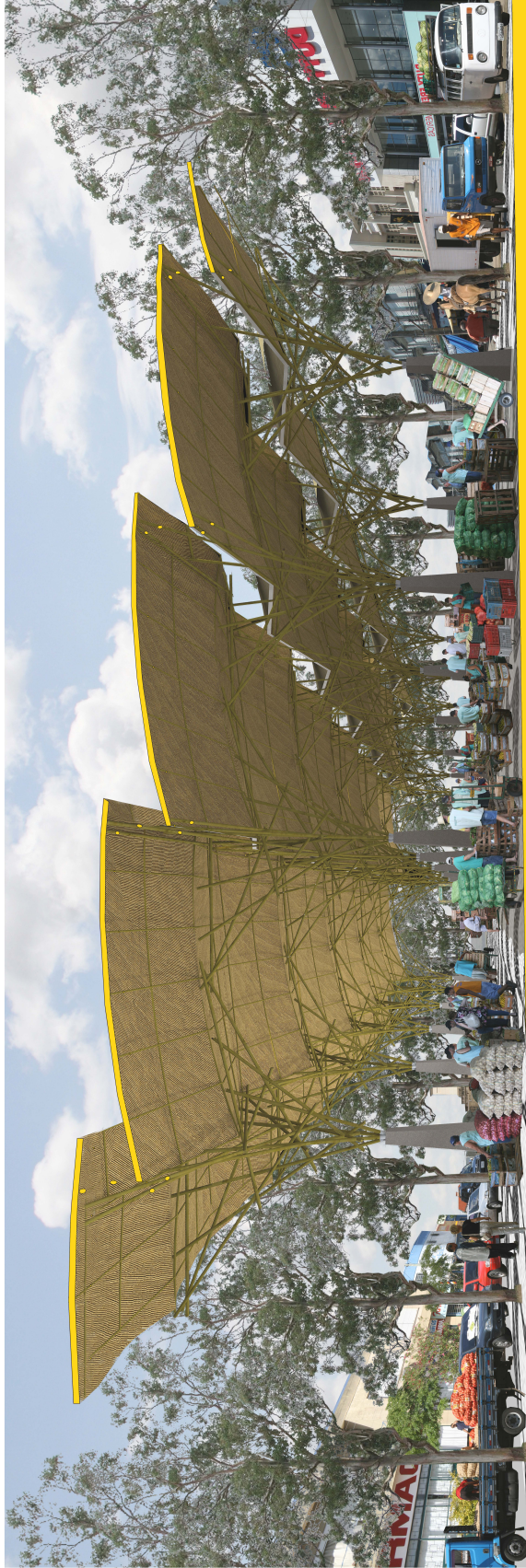


81. Section of camelodromo



80. Section of market





mercado publico

82. Section Perspective of Market





83. Camelodromo

## Conclusion and Reflection

The proposition of this thesis may seem rather loose and driven purely by the power of suggestion. In fact, it is. A bare market structure in the center of a city like Aceguá is very loose, too loose for most Western standards of architectural and urban design. The market's simplistic and flexible delineation of space is indeed a suggestion to the potential of that place. Beyond just a suggestion, it is an invitation - an invitation to the local farmer, the local store owner, the local primary school soccer team. In an academic setting it is an invitation to the scholar or professional to imagine what could be placed in the space. The possibilities are as endless as reasons why the first primitive huts were assembled.

The principles of microcredit organizations follow similar flexibility in how aid is utilized by the aided. In the simplest correspondence, the market is credit. The creativity and ingenuity for the generation of wealth comes solely from the borrower. The lending organization merely facilitate their access to credit. In the case of the public market, the farmer, the artisan, the small entrepreneur decide how to use the space, how to market their product or service. The market building design merely facilitates their access to customers.

The resolution for the rural exodus in the Pampas is not one of massive restructuring. It is one of supportive nudges. It is also not one of pure altruism, but actually a reformed business plan for development. The prevailing property of micro-lending development is its inherent cyclical flow of credit. The provision of access to the small entrepreneur is a form of credit, not a donation. That small loan becomes exponentially more valuable in the hands of the businessman and will eventually return to the lender with a small interest. Both parties profit from the transaction and will continue to invest in future transactions. The principles of the market design and microcredit allow the lender to become a catalyst by setting in motion a cyclic flow of capital and consequently a cyclic flow of access. With these cycles in motion, development is able to occur.

The simple truth is that the Pampas, as most of the developing world, the desire to grow and innovate is already present and is not what is in short supply. The people have

the skills and capacity to develop themselves, they just need a structure to hold on to - a trellis, credit. In a country where structure is in short supply, the saying “if you build it they will come” is definitely true. The strength of providing financing, infrastructure, and opportunity grasps not the power of suggestion but the true power of the people of the developing world - the power of existence.

## Design and Micro-finance

The goal of this thesis has been to minimize the rural exodus of cities in the Pampas by empowering individuals to climb their way out of their difficulties and ultimately create a sense of place there. The problems facing the rural population in the Fronteira region are diverse and unfortunately complementary - the sum of the problems creates an exponentially greater problem that is the rural exodus. Considering the crisis of the rural exodus is multi-faceted, the solution to it must be multi-faceted as well.

In the municipalities along the Brazil-Uruguay border, the average rural worker's greatest difficulty is access. He is surrounded by massive spreads of underproductive land, oversized thoroughways, but no access to capital, land, or customers. The primary principle of micro-finance is the empowerment of the individual to help himself. The main service provided by loan organizations is access through small amounts of capital. It is quite a leap of faith to loan money to someone with little or no credit. Their only collateral is their service and at best a very modest house. A similar leap of faith occurs in the construction of the proposed market space in Aceguá. The building itself is functionally only a roofed space in the center of town and provides no collateral other than the power of its suggestion as a place, a destination. The question still remains: how does a market building resolve the lack of access to land, capital, and customers, and ultimately participate in the alleviation of the rural exodus?

*If you give them access they will build - and repay their loan*

Muhammad Yunus makes the argument in *Banker for the Poor* that the borrower with no formal credit will repay their loan for one reason - they must in order to survive. He criticizes the traditional premise that the poor are poor because they lack skills that are marketable. Instead, he argues that every individual has the marketable skill of survival and are poor because they lack control of capital<sup>22</sup>. He goes on to mention that the majority of the world population, particularly in the developing world, is self-employed and falls under the convention of "informal business". They are seen as unfit

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<sup>22</sup> Yunus Banker for the Poor, page 140

for credit and control of capital by traditional banking systems. Hernando de Soto makes a similar argument when discussing the idea of “dead capital” in *The Mystery of Capital*. He estimates that the total value of dead capital, or informally owned real estate, in the Third World is at least \$9.3 trillion<sup>23</sup>. Between the dead capital of the poor and their marketable skills, the financial systems in the developing world owe it to themselves to facilitate the productivity of this massive section of the population by providing them with access to capital.

Yunus’ Grameen Bank is not a non-profit organization. It is a for-profit company with diversified investments including the largest cellular phone company in Bangladesh. The market space in Aceguá would also be for-profit. The construction of the market would be an investment on the marketability of the small businessmen of the city, just like a loan from Grameen Bank is an investment in the borrowers’ skills. The investment on the construction would likely come from the municipal government or a third party private organization through government contracts. Their return on investment would be the rental from the growing businesses using the market space. In essence, the investment party is persuaded to invest in the small businessmen as a means to invest in a standard commercial rental property. Whether benevolence is an appeal of the investment or not, the party is approached with a straightforward real estate opportunity that will attract capital to trickle down to the individual renters as a capital loan in form of retail space.

The long term success for both the investors and borrowers depends on the designed flexibility of the market. Just as any investment company, the more diverse capital spread the more stable the returns. The market area in Aceguá as designed in this proposal allows for a wide variety of businesses to take place in a central district of the city. The transition from a purely informal open space parking lot for small vendors to a covered marketplace for formalized larger vendors allows for a large range of businesses to establish and grow. The flexible and diversified spaces in the market area allow the opportunity for an individual to start an entirely informal business out of the trunk of his car in the east parking area and incrementally formalize his business through the semi-regularized Camelodromo in the form of a kiosk, and eventually strive to establish a formal business *box* in the main market building on the west end of the market space. The

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23 de Soto, *The Mystery of Capital*, page 35



progressive growth of each individual business in the markets allows for a cyclical and self-propelled circulation of capital and businesses through the different stages of formality in the market area to maintain a stable return on investment for the loaning party and a flexible housing for businesses to grow or shrink as they see fit. Below are parallels between micro-credit, marketplace, and bamboo:

	<b>Supply</b>	<b>Expansion</b>	<b>Formalization</b>	<b>Investment</b>
<b>Micro-credit</b>	\$	\$\$	\$\$\$	Lender
<b>Marketplace</b>	Lot	Camelodromo	Market Building	Infill Building
<b>Bamboo</b>	Seed	Sprout	Bamboo	Seeding

One of the most empowering aspects of the capital investment on individual entrepreneurs is their potential to eventually grow into investors themselves. Another premise of the market design is that the development of the marketplace will spread into the city fabric as well. The entrepreneurs that are able to truly take advantage of the market and grow into investors are the ones who will invest back into the city beyond the marketplace. The stray empty lots in the city blocks surrounding the central market area are ideal for further formalization of their businesses. They may begin investing in storage and distribution facilities, more robust comfortable homes, small rental properties along the street fronts of their buildings, and so on. With the investment power and control of capital shifted into a symbiotic collection of large external hands and smaller local hands, the developmental power of the marketplace's influence truly surfaces.

Once the marketplace business cycles are established enough to begin influencing development outside the central market area, the investment in the market then evolves from a defined rental property into a catalyst for citywide investment in Aceguá. The self-empowered individuals that pass through the markets employ themselves and others who would otherwise be at higher risks to move to larger cities in search of jobs. Their investments in the surrounding areas employ construction workers, their growing businesses attract other businesses to the same area. The conglomeration of businesses along the free trade zone of Aceguá in time establishes once again a *raison d'être* to the

region - an international trade post. As long as the city remains a destination and not pit stop in the throughway between Brazil and Uruguay, it maintains its potential to harvest business and growth for its local residents.

## **The Trellis**

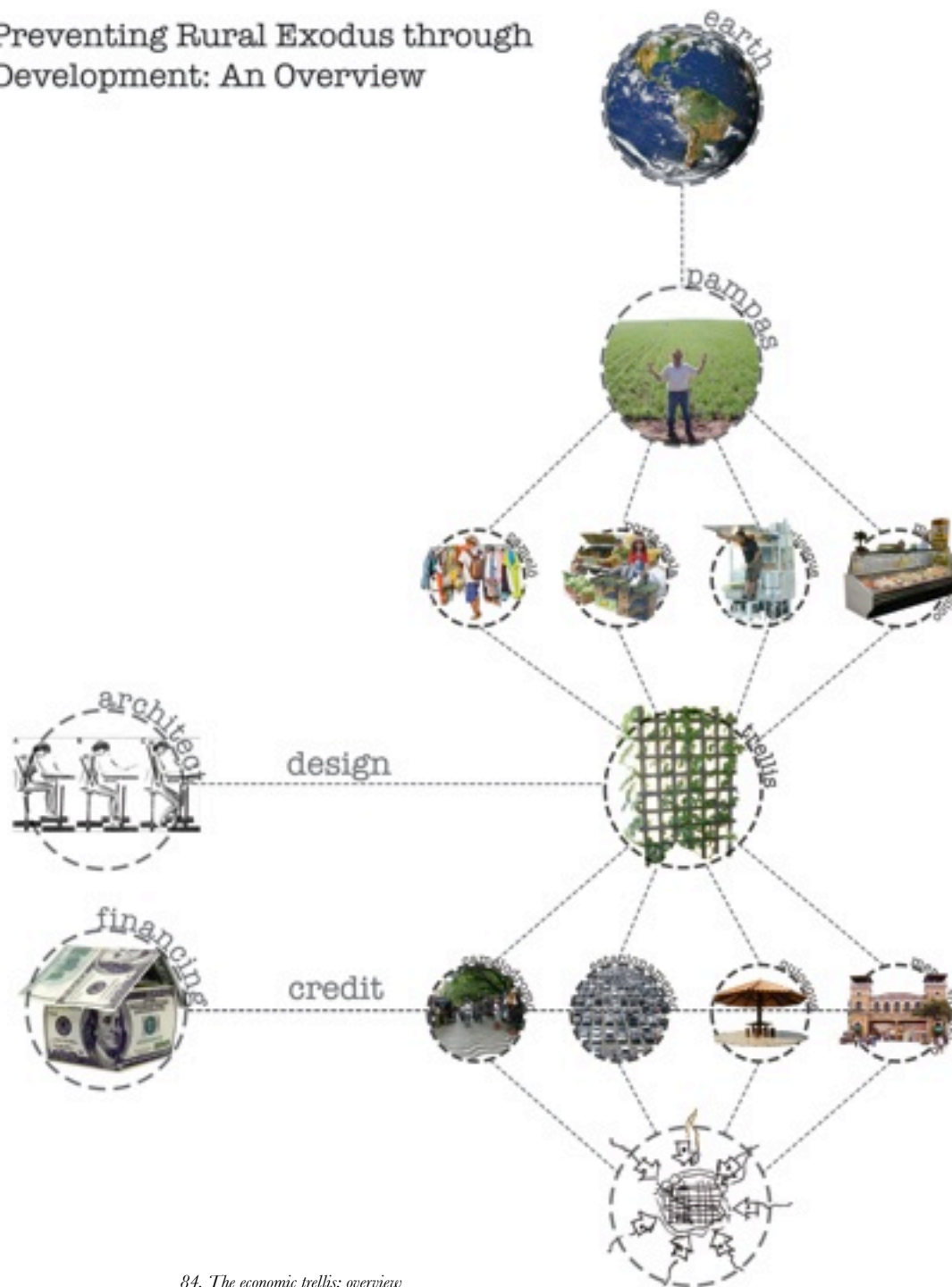
The main economic premise of this project is that if there is a more cyclical flow of capital and goods through the different regions, then the rural population centers can flexibly flourish through local opportunities for the generation of wealth and the improved connectivity of these regions will benefit the all sections of society and ultimately slow or ideally reverse the rural exodus.

The project seeks to prove not just that a beautiful building will make things better, but that the creation of a skeleton, an infrastructure, can allow the local commerce to take over it like an ivy on a trellis. This trellis is symbolically and physically the primary design aspect of the development of the market and the physical synthesis of the economic and architectural aspirations of resolving the rural exodus in the Pampas.

The contribution that architects can make to socioeconomic problems of the developing world is good and responsible design. If architects begin treating their designs as an investment rather than a service they will contribute even more greatly to the success of these development programs. In the case of this project, the market trellis ties everything together through design, it is the investment of designers in the world of micro-finance, their loan is not one of capital but one of capital direction and investment.

Far too little credit is given to the individual that inhabits a building. Just as gardener cannot take full credit for the beauty of his garden, an architect cannot take full credit for the beauty of the space he has designed. The gardener can build the trellis and invite the ivy to climb it, but he cannot completely control the manner in which the ivy grows. It is a symbiotic relationship between nature and design.

## Preventing Rural Exodus through Development: An Overview



84. The economic trellis: overview

## The Trellis: Explained and Reflected



The rural exodus and rapid urbanization is a global phenomenon. It generates severe problems for the well-being of the world's population, particularly in the poorest groups. It is not a problem that can be solved universally through uniform strategies. It must be approached at a regional scale, taking into account all the opportunities that are available in that particular region. Only by finding a potential generator of wealth can there be any development driven to improve the conditions of the rural regions. In other words, the region of interest must be developed according to its own natural *raison d'être*.



The Pampas have been particularly hard hit by the rural exodus. It is also primed for development, taking advantage of the extensive free trade zones along the Brazil-Uruguay-Argentina borders. The political decisions to establish such zones has opened an opportunity for the cities along the borders to regain their reason for being as trade posts. Taking the precedent of Rivera/Santana do Livramento, the “Fronteira” between Brazil and Uruguay has tremendous potential for generating commerce, both formal and informal, and this potential can provide a generator of wealth to control the rural exodus in the region.



The camelô, or street vendor, is a completely informal and ambulant businessman. He is extremely resourceful and will find streets that are busy and diverse. He will usually camp his business temporarily on downtown streets or beaches.



While the camelô usually carries his goods on his back or in a cart, he sometimes will be fortunate enough to own a car. With that he can fill his trunk with goods, transport it from further away, and settle on a parking spot to sell his goods. Streets that are filled with both pedestrians and automobiles are ideal for this class of camelô.



For the informal entrepreneur that has already saved enough capital to expand his business, he may often invest in his own business. Popcorn vendors, Basket weavers, farmers, all begin legitimizing their business as they invest in it, hence becoming a more formalized and logistically permanent commercial establishment.



The established businessman will eventually look for a permanent location. Public markets historically were the primary stop for the formalized entrepreneur. The *mercado público* was a vital urban space and center for business and culture in cities of South America. Since the heavy modernization of cities and rural exodus in the past century, they've been slowly demolished or vacated. Many cities were left without a true center, and the re-establishing of such city centers can play a vital part in controlling the rural exodus by creating place and opportunity.



The analogy of an economic trellis is useful to determine the role of the architect. In the pampas, there is already the opportunity coming from the free trade zones and all the logistical and economical advantages of the region. In Aceguá, the creation of the new city center through design is only the first step in reviving a city to house populations that are at risk of migrating to urban areas. The ingenuity



and resourcefulness of the informal entrepreneur in the Pampas cannot be underestimated and is the primary component in the development of the city markets that will generate wealth and reason for being in the city. The role of the architect then becomes to design a trellis, a skeleton on which the businessmen themselves can use as shelter and support to facilitate the growth of their business. The design must be sensitive to the regional societal, economic, and aesthetic norms. It should be a varied and flexible space that provides an opportunity for the entrepreneur to incrementally expand his business in time while not having to migrate elsewhere for that opportunity.



The primary programmatic component of the development of the free trade zone is an enlivened sidewalk. The sidewalk connects all the zones of the center of the city and is the principal marketplace for most informal business. Camelôs can offer their goods to pedestrian consumers as they walk from place to place or as they enter and exit their cars that are parked along the sidewalk.



The second essential element in the development, albeit not necessarily programmatic, is ample parking. The Pampas have embraced the car culture more than any other region of South America, and the car is the primary transportation method, and is also a lively flexible space for business. In addition to parking for consumers and vendors, parking for unloading goods into the formal marketplace is essential.



The camelodromo, or kiosk park, is a transitional space between the camelôs' streets and the established businessmen's mercado publico. It should provide a formalization of space and very basic shelter. In form it should encourage business to take place under its canopies and mediate between informal and formal commerce, allowing a transition for the small entrepreneur to incrementally grow.



The most erudite and formal aspect of the design of the free trade zone is the mercado publico. It is still not a particularly sophisticated structure, yet it should be an easily identifiable and very pleasant public space. It should be the place for growing entrepreneurs to culminate their business and reach a condition of legitimacy and respect that others should strive for. In many ways it may be the main attraction, as it may be relatively considered the most luxurious space in the city center.



The result of the newly designed economic trellis is the eventual control over the pressures that push rural people to migrate to urban areas. The creation of regional business centers can attract at-risk populations into smaller and closer towns rather than distant larger metropolitan areas. In the case of Aceguá and other cities on the Brazil-Uruguay border, taking advantage of the free trade zones allows for re-characterizing the town through its new *raison d'être* - and international popular trade zone. Within this zone, the opportunity to incrementally grow financially is far more accessible than in large industrialized capital cities, and the successful design of these places can be the most attractive allure for the rural emigrant to concentrate his efforts here, as opposed to leaving his region and participating in the rural exodus.

## Urban Growth

The goal of alleviating and reversing the rural exodus in the Pampas, Aceguá specifically, depends on the extended influence of the market's success in the city. In time, the direction of the capital investments eventually will stabilize in the marketplace and trickle toward the surrounding areas of the city. By spurring growth in a small city like Aceguá, much of the development will bring services, goods, and opportunities that were not available before to the region. The development of the city into a more robust regional center provides more support for the rural population to maintain their livelihoods and avoid the necessity of migrating to larger urban centers in search of opportunity.

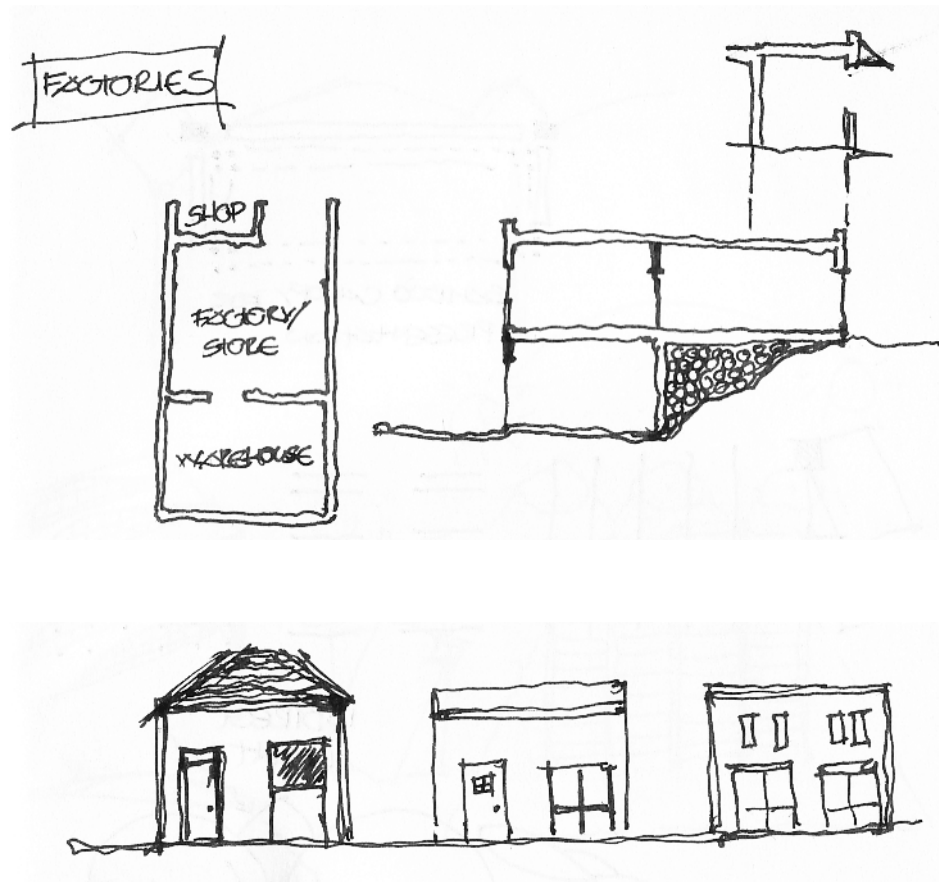
Development in the Pampas is unique from many developing countries. The region was fortunate to have been heavily subsidized in the past by the federal government in areas of infrastructure and land distribution. Many cities of the Pampas actually resemble more closely vacated city centers of American cities than underdeveloped towns in the rest of Latin America. Aceguá is a clear example of a city whose infrastructural grid is oversized. Most rectangular city block are not even half occupied and the over-engineered thoroughfare that divides the two countries down the middle of the city is a gross underutilization of prime real estate in the city.

The shape of the infill construction in Aceguá, as in most other cities of the Pampas, would develop in small buildings very near the street front. Most cities in the region were pumped with government money in the mid-20th century for infrastructure, particularly roads. The cities never grew to fill the blocks of empty lots and some cities like Aceguá were left with bare lots even in the city center. The lots are deep and average about 10 to 20 meters in width along the street and the buildings around the city do not exceed two stories.

The businesses in the market that begin to outgrow their box in the main building may seek to expand their space out into the immediate surroundings of the market. They can buy lots for storage, for manufacturing goods, or even for housing. Eventually the individuals whose businesses fare well may begin investing in real estate themselves and producing rental properties along the street fronts of their lots along the main streets. In

creating new investments and businesses they are now taking part in the micro-finance structure that once helped them, thus feeding into the cyclical capital flow in the region that will provide for the development of the rural town center.

One of the businesses that can sprout from the marketplace is a design firm, one that eventually builds model infill homes around the market that will be replicated by other investors that like the design.



85. Sketches of Infill development lots

## **The Bus Station**

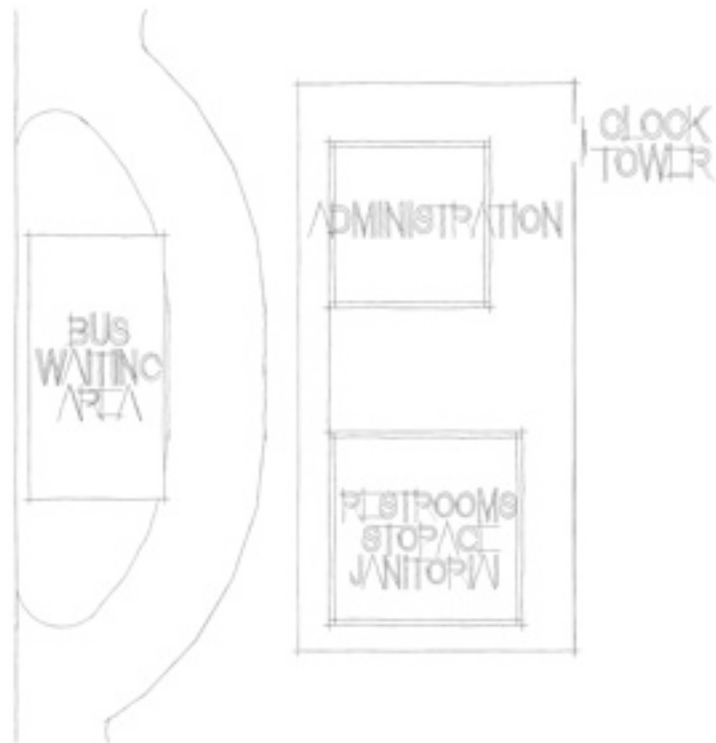
The entry piece of the market area coming from the Brazil side of the city is the bus station. It is the place for the back-of-the-house spaces of the market as well as the main transportation hub. The building is a simple shelter made up of three enclosed spaces holding up two roofs. The bus waiting area is on the west side along the bus drop off lane. The administration and other service spaces are housed in the larger volumes of the bus station structure. At the northeast end is a clock tower to mark the entrance of the public market area and to provide a sibling terminal monument to the monuments to the border on the east end of the market area.

As with the rest of the market, the administration of the market is open ended and to be determined by the businessmen. They may choose to create a cooperative or to simply rent out space from one managing organization. In any case, the administrative offices can start off in the bus station and eventually branch off into different departments along the properties surrounding the central market area.

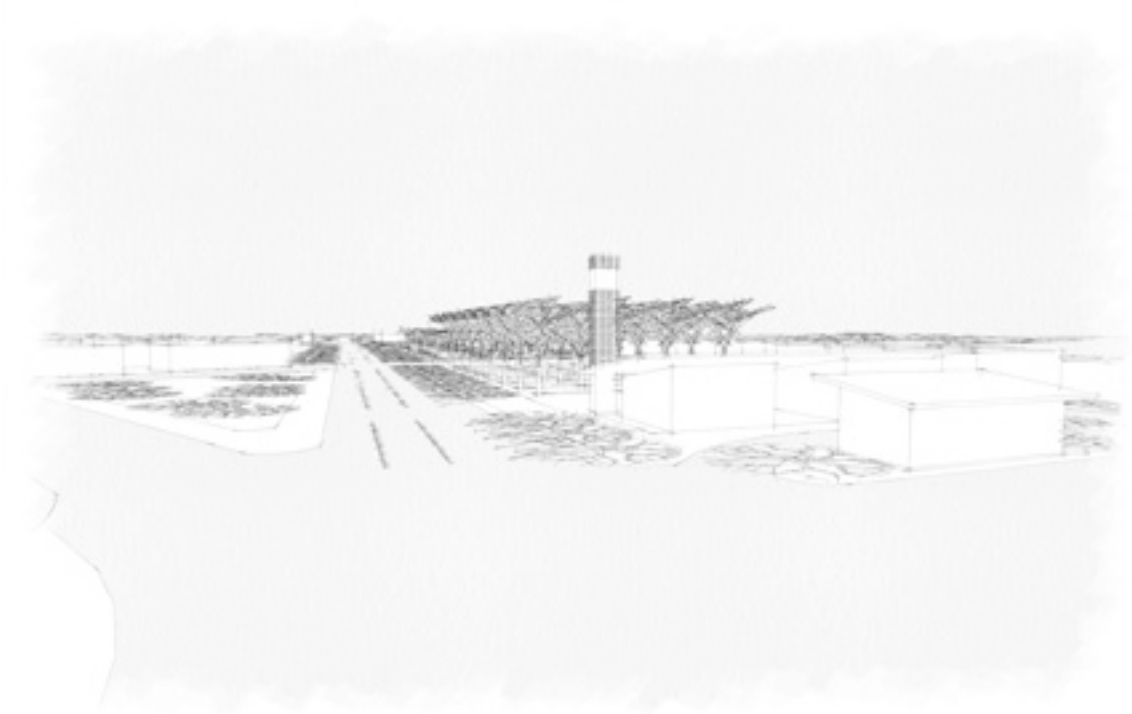
Restrooms and other services are an interesting question when it comes to public markets in this region of the world. Although it would be a Western notion to provide the basic facilities to maintain the space hygienic and functional, it is also an opportunity to spawn new business in the immediate area. Most public markets in the region have paid restrooms. The necessity for restrooms in a large public space is obvious, and inevitably some local would be happy to create bathrooms for a minimal cost in a lot adjacent to the market. It is entrepreneurship at its purest. Nonetheless, restrooms and janitorial spaces are provided in the bus station to provide such services until better accommodations are naturally created by local businessmen.

When it comes to restrooms, it is not a question of “if you build, they will come”, rather, it is a question of “if you pee, they will build”; they will build very believable restrooms. In fact, a quick salami maker may even invest in his own restroom business that may provide curing raw material from the accumulated waste liquids to cure his meats. This would create a truly entrepreneurial sustainable business - restrooms and meats.

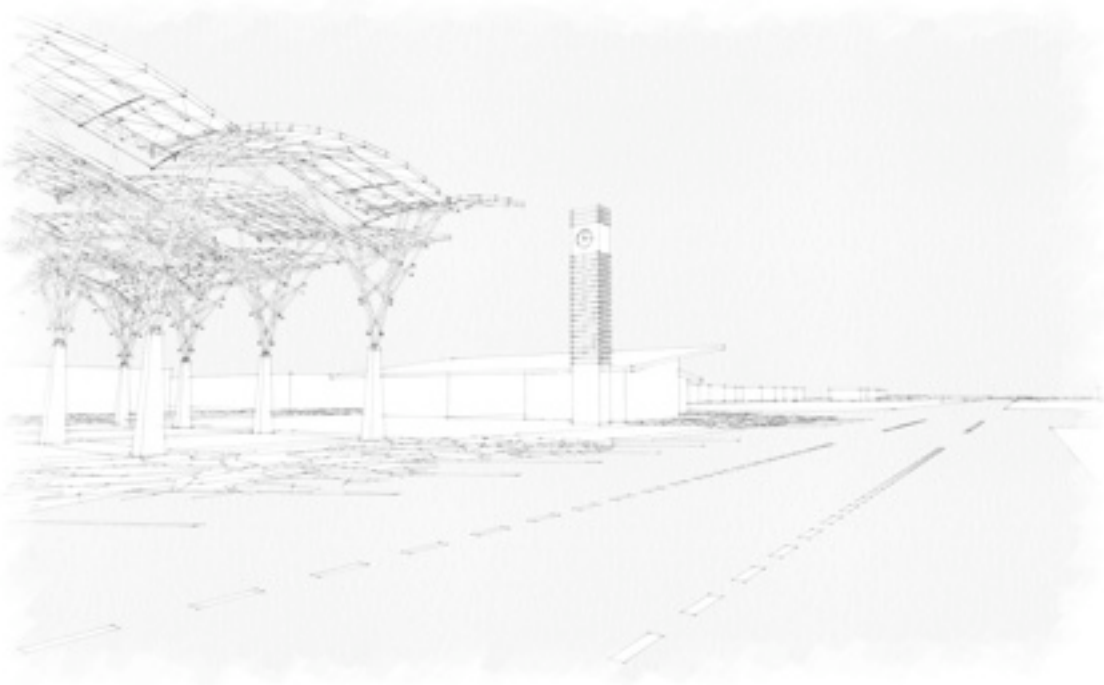




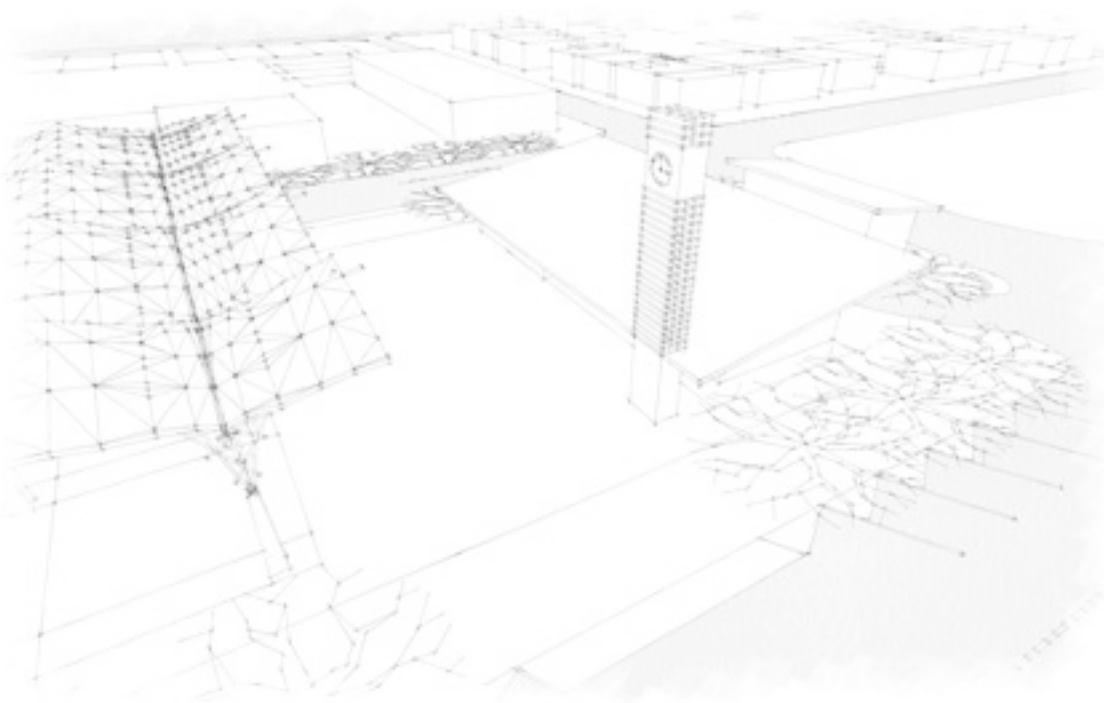
86. Bus station uses



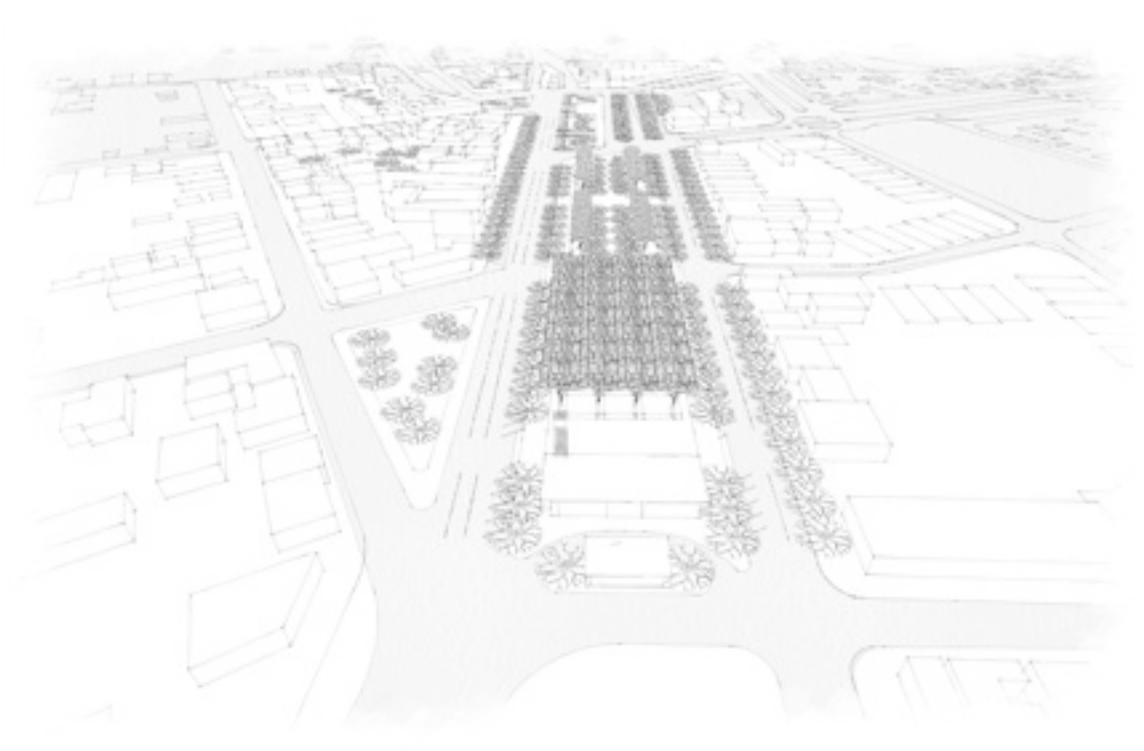
87. View down main avenue on north side of bus station and market building



88. Bus station perspective from northeast



89. Bus station aerial perspective from northeast

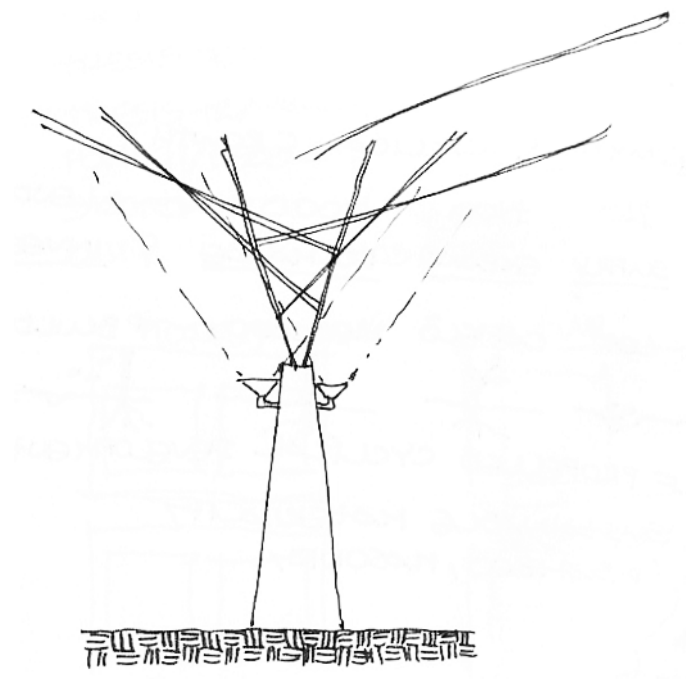


90. Aerial axial view of market area looking East

To wallow in the lack of development of the service spaces of the designed market building is to completely miss the premise of this project. The project is not about establishing the order of how people behave in the city or the market but to give them a skeleton to hold on to make their own decisions as to how they may establish their business. Free competition, not “benevolent” dictatorial design, will allow every last aspect of the market space to be used as a generator of wealth for some individual. Everything the project may be lacking will be filled in naturally by the locals as they see the potential to create a small business out of it. It is difficult to relate a project for the population with an extreme path of privatization. The fact is that the free trade market space is intended to be a popular urban space, hence in private (although diverse and numerous) hands. To build a an erudite structure that is controlled by a “‘benevolent’ dictatorial designer” would minimize the number of hands in control of the space, and therefore antithetical to the project intentions.

## Illumination at Night

The main market building was designed to allow for indirect light to enter from the south. The need for artificial lighting is minimal even on the cloudiest days. The public market hours would only be during the day hours, but a large covered space in the center of the city would be ideal for other uses during the night as well. The concrete columns are a logical location for night-time illumination. The reflection of the light against the tree-like columns holding up the roof would emphasize the design of the building.

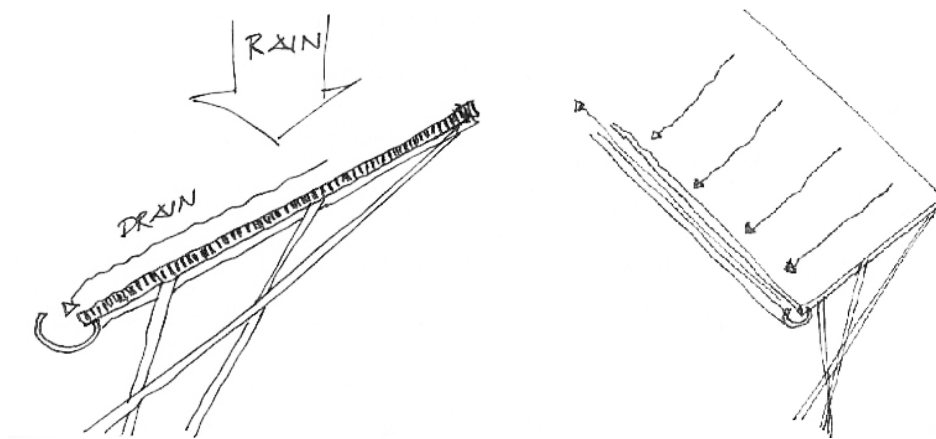


91. Column with lighting proposal

## Roof Drainage

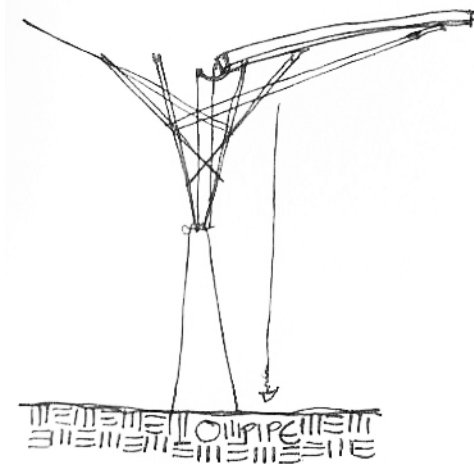
The roof shape as illustrated in the renderings at the public presentation brought up the question of water drainage and roof leakage. There are two possible solutions to the drainage of the roof:

Flatten the lower side of the canopy bays to create a singular straight edge to each of the three long bays. This allows for a roof drainage gutter at each low end that drains out to one slightly sloping side.



92. Roof drainage strategy

Maintain the current canopy shape and install drains from each low corner of the canopies down through the columns and under the concrete slab through pipes.



93. Alternative roof drainage strategy





## References

- Adams, Cassandra, and Lynne Elizabeth. *Alternative Construction : Contemporary Natural Building Methods*. New York: John Wiley & Sons Australia, Limited, 2000.
- "AFP: Uruguai apreende contrabando brasileiro de frutas e verduras." Google. 26 Dec. 2008. AFP. 21 Jan. 2009 <[http://www.google.com/hostednews/afp/article/ALeqM5icJ07vaKkhlcB8hn\\_zglF9Jwz6Kw](http://www.google.com/hostednews/afp/article/ALeqM5icJ07vaKkhlcB8hn_zglF9Jwz6Kw)>.
- Alexander, Christopher. *A Pattern Language : Towns, Buildings, Construction*. New York: Oxford UP, 1978.
- Alexander, Christopher W. *Notes on the Synthesis of Form*. New York: Harvard UP, 1972.
- Almeida, Gerson. *Desenvolvimento Sustentável e Gestão Ambiental nas Cidades*. Ed. Rualdo Menegat. Porto Alegre, RS: UFRGS, 2004.
- Concrete, Masonry and Brickwork : A Practical Handbook for the Homeowner and Small Builder*. Minneapolis: Dover Publications, Incorporated, 1976.
- De Soto, Hernando. *The Mystery of Capital : Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books, 2003.
- Dilworth, Dianna. "Cruz Finding New Solutions for Border Living." 25 May 2006. 11 Nov. 2008 <<http://archrecord.construction.com/news/daily/archives/060525cruz.asp>>.
- Fathy, Hassan. *Architecture for the Poor : An Experiment in Rural Egypt*. New York: University of Chicago P, 1976.
- Feresten, Spike. "The Muffin Tops." *Seinfeld*. Dir. Andy Ackerman. NBC. 8 May 1997.
- Foester, Bernd. *Man and Masonry*. Washington, DC: Allied Masonry Council, 1960.
- Hugues, Theodor. *Detail Practice : Building with Large Clay Blocks and Panels, Details, Products, Built Examples*. New York: Princeton Architectural P, 2004.
- Hurt, Steven. "The American Continental Grid." *Threshold* 2.
- IBGE. IBGE. <<http://ibge.gov.br>>.
- Marques, Maria. "Comunidade Rural." Thesis.

Menegat, Rualdo, ed. Atlas Ambiental de Porto Alegre. Porto Alegre, RS: UFRGS.

Michael, Gage. Design in Blockwork. London: The Architectural P, 1972.

Movimento Sem-Terra. Movimento Sem-Terra. <<http://mst.com.br>>.

Nejo, Olukayode O. "Self-Help Urban Community Development Focused on Lagos, Nigeria." Thesis. College Park, MD, 1994.

Ouroussoff, Nicolai. "Learning From Tijuana: Hudson, N.Y., Considers Different Housing Model." The New York Times. 19 Feb. 2008. 11 Nov. 2008 <<http://www.nytimes.com/2008/02/19/arts/design/19hous.html>>.

Pauli, Gunter. Grow Your Own House : Simon Velez and Bamboo Architecture. New York: Vitra Design Museum GmbH, 2000.

Pelli, Victor S. Habitar, Participar, Pertener: Acceder a la Vivienda: Incluirse En La Sociedad. Nobuko, 2006.

Perry, Luke W. Weblog post. The Incremental House. <<http://incrementalhouse.blogspot.com/>>.

Peterson, Garry. "Teddy Cruz - What adaptive architecture can learn from Shantytowns." Weblog post. Resilience Science. 15 Mar. 2006. 11 Nov. 2008 <<http://rs.resalliance.org/2006/03/15/teddy-cruz-what-adaptive-architecture-can-learn-from-shantytowns/>>.

Portela, Fernando, and José Vesentini. Êxodo Rural e Urbanização. Editora Ática, 1999.

Robinson, Daniel N. Aristotle's Psychology. Dnmrobinson, 1999.

Sachs, Jeffrey D. The End of Poverty : Economic Possibilities for Our Time. New York: Penguin (Non-Classics), 2006.

Schumacher, E. F., John McLaughrey, and Kirpatrick Sale. Small Is Beautiful : Economics As If People Mattered. New York: HarperCollins, 1989.

SHoP Architects PC. 39571 Project Profile. Brochure. New York: Author, 2006. SHoP Architects PC. 14 Nov. 2008 <<http://shoparc.com>>.

Van Lengen, Johan. The Barefoot Architect : A Handbook for Green Building. Minneapolis: Shelter Publications, Incorporated, 2007.

Villegas, Marcelo, Ximena Londono, and Gabriel German Londono. New Bamboo : Architecture and Design. Barcelona: Villegas Editores S.A., 2003.

Yunus, Muhammad. Banker to the Poor : Micro-Lending and the Battle Against World Poverty. New York: PublicAffairs, 2003.

