

---

# الإنتاج و التصنيع. متطلبات الوادي



# INDUSTRY AND PRODUCTION NEEDS OF A VALLEY

## PRODUCTION ZONES OF ASSIUT **Production Zone Overview**

## AGRICULTURAL PRODUCTION **Assiut Agriculture Analysis**

## INDUSTRIAL PRODUCTION **Cemex: Internalization** **Assiut Fertilizer Factory: Strategic Siting?** **Coca-Cola: Relocating and Expanding** **Bani Ghalib: Behavior Within the Grid** **Wood Workshops: Mimicking the City** **Mechanization, Connections, and Moving In** **High-End Production**

## STATE-CONTROLLED PRODUCTION **University Workshop: Becoming Flexible** **Bread Factories: Balancing the Necessary**

## PRODUCTION BY DEMAND **Producing in the City Core** **Blacksmith: Production Network** **Rationalization of the Artisan** **Roadside Mechanics: Pushed to the Edge** **Mud Bricks: Production Without Economy** **Metabolizing Demand**

---

*ETH Studio Basel*  
Contemporary City Institute  
Oliver Muff, James Junkyung Yeo

Prof. Roger Diener, Prof. Marcel Meili  
Mathias Gunz, Rolf Jenni, Milica Topalovic  
Christian Mueller Inderbitzin

Spring Semester 2009

# INDUSTRY AND PRODUCTION NEEDS OF A VALLEY

The Nile Valley region of Assiut embodies many different types of production and industries. These range from smaller scale establishments producing out of immediate need, to bigger scale factories connected and operating at a national or global level. The different typologies serve different purpose in respect to the city, and as a whole fulfill the needs of the city. We started by isolating the individual areas of production and classifying them into categories. This was to make further inquiry into the different roles and behaviors of production enterprises and clarify the similarities and differences between them.



# PRODUCTION ZONES OF ASSIUT



## ■ Agricultural Production

The area around Assiut is dominated by agricultural production. This sector accounts for 38.9% of the total workforce, second largest after services. It exists as a method of supplying the city with a vital supply of food and employment.

## ■ Industrial Production

This type of production primarily lends itself to national or supranational strategy. Production facilities are sited exclusively on the outskirts of the green valley, due to the high value of arable land.

## ■ Production by Demand

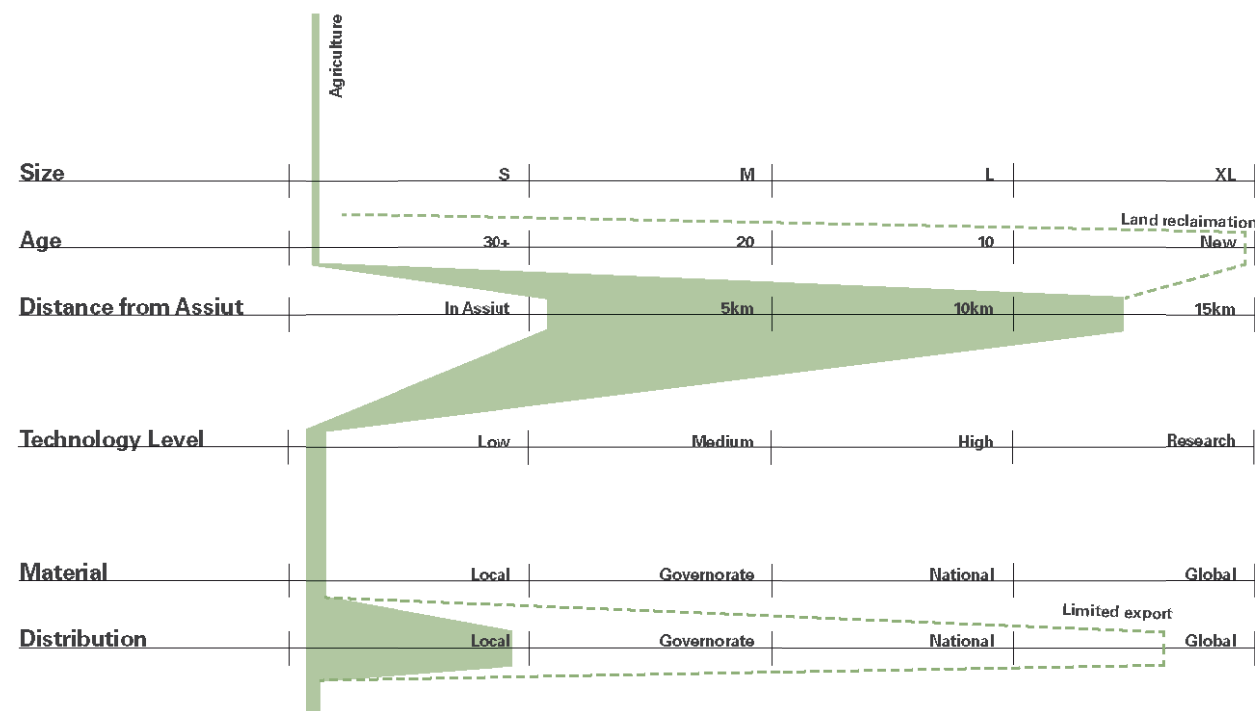
Small-scale workshops are embedded into the city fabric, characterized by unpretentious flexibility. Rather than producing a selection of cataloged products, they commonly produce whatever is needed if within their capabilities.

## ■ State-driven Production

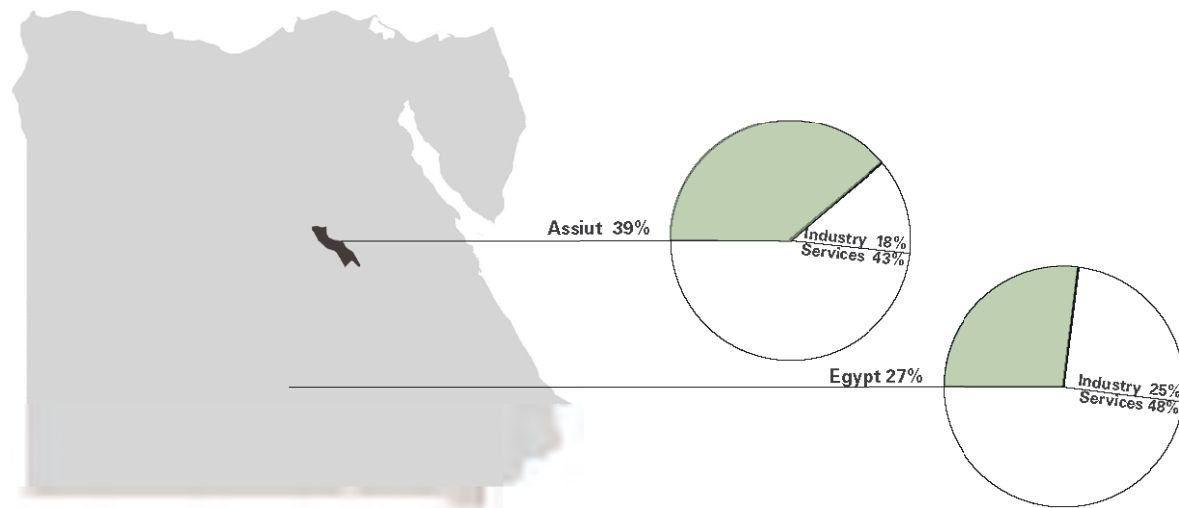
State-owned production sites exhibit a political dimension in organizational structure; examples explored range from more industrial means of production to small bakeries within the city fabric.

# AGRICULTURAL PRODUCTION

Assiut Governorate's large agricultural sector accounts for 38.9% of the total workforce, similar to the rest of the Upper and Lower Egypt governorates. In contrast, the Urban and Frontier governorates show a lower percentage of total workforce working in the area of agriculture, which signifies that Assiut, along with other primarily agricultural governorates, support the Urban and Frontier governorates food supply.

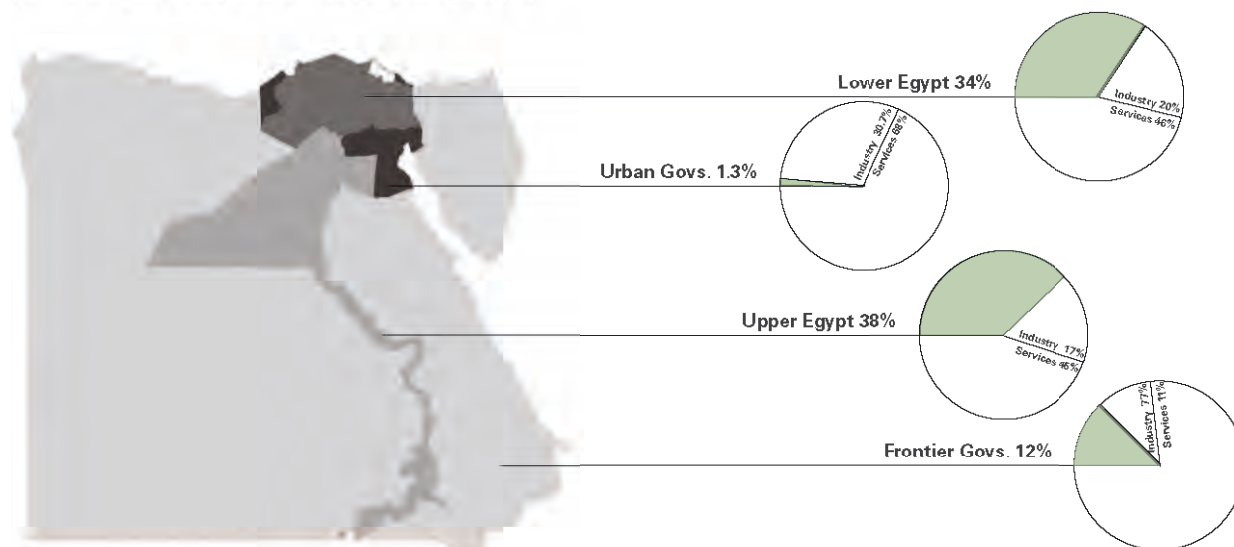


The arable agricultural area around Assiut is prominent and extensive, existing as a vital source of nourishment and employment. Although crop export exists, there are more imports to compensate for lack of food. For this reason, most of the valley region is reserved for agriculture while recent residential or industrial developments are forced to locate themselves in the desert.



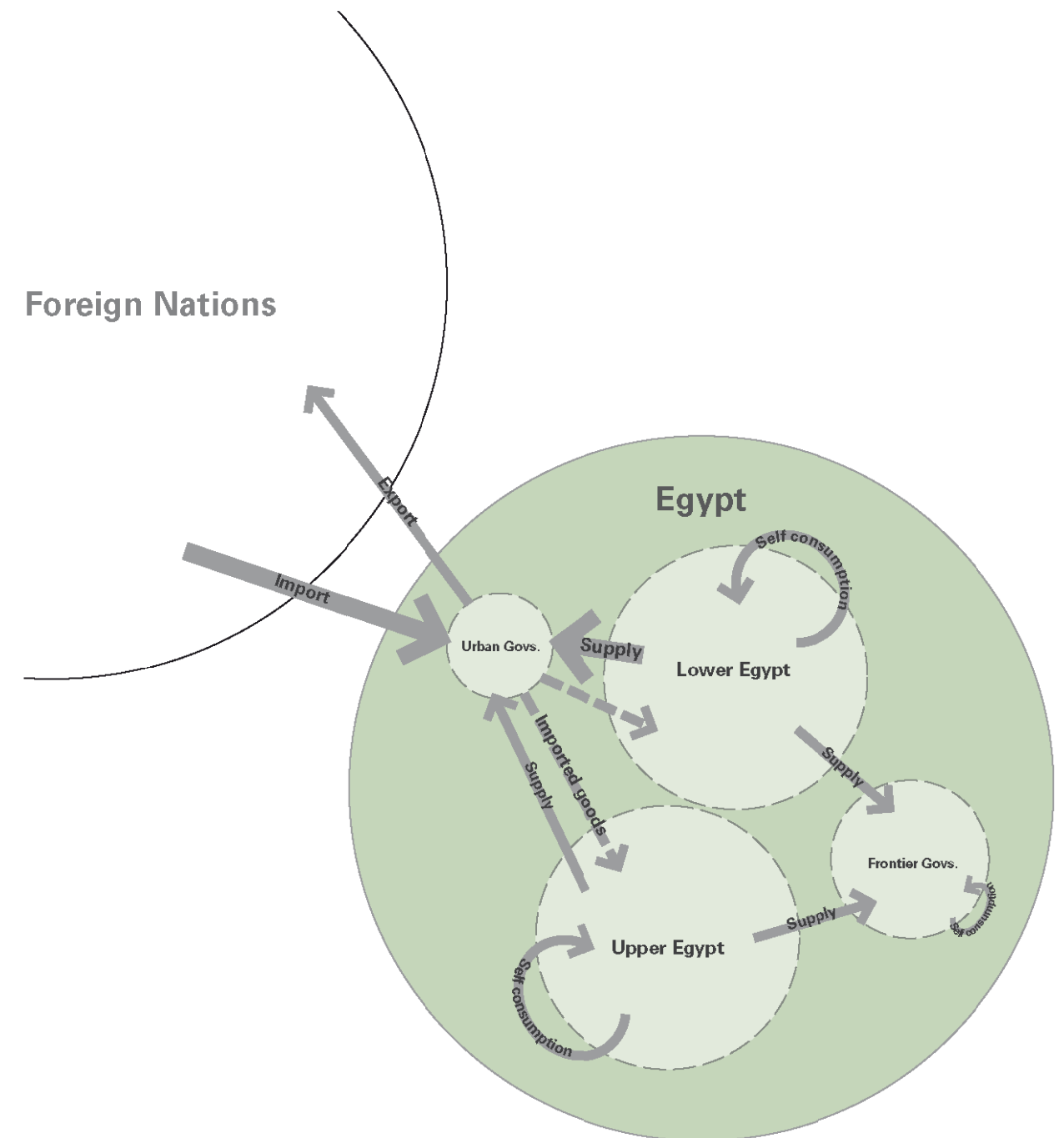
### Labor Force: Egypt and Assiut

Compared to Egyptian averages, Assiut governorate commits a higher percentage of the workforce to agricultural production, indicating its role as agricultural provider.



### Four Groups of Governorates

The Urban governorates show a very low percentage of agricultural labor force as compared with a very high percentage of industry and services. This is due to its role in trade and commerce within the governorates. The Frontier governorates show low agricultural activity compared to services, due to lack of arable land, and high concentration of tourist attractions along its beach fronts. With its comparatively large agricultural labor force, Upper Egypt can be said to "feed" its Frontier governorates.



### Governorate Agricultural Supply

Upper and Lower Egypt governorates act as primary suppliers of agricultural production. These governorates supplement others which focus on sectors like tourism and industry. Self-consumption among governorates also applies, and the gaps in need are filled by overseas imports. A limited flow of exports is far surpassed by the amount of imports.

# INDUSTRIAL PRODUCTION

Industry is treated as a mode of rationalized mass production where worker skills are reduced to their very specialized function and tradition plays only a very abstract role on an executive level. These factories are mostly part of a national idea or supranational strategy, located on the city outskirts, as the high value of arable land leads to a placement exclusively out of the green valley—displacing even older, and more central facilities.



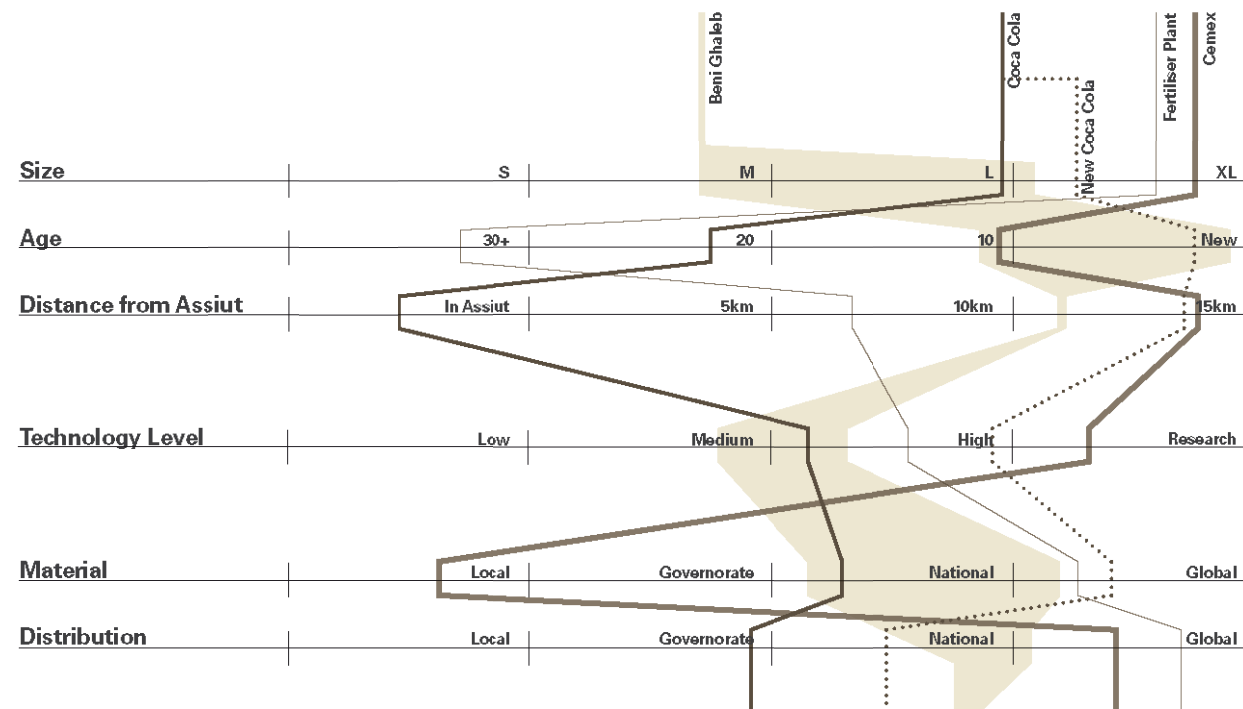
1



2



3



1. Cemex: Mexican producer of cement
2. Bani Ghalib/El Safa: Government-established industrial area with small to medium scale enterprises
3. Assiut Fertilizer Factory: Egyptian fertilizer producer, and a source of export
4. Coca-Cola Egypt: American beverage producer for Assiut governorate, with omnipresent products



1. Raw materials are mined from this nearby area
2. Cement is produced and stored within the facility
3. Privileged employees are housed in residential complex
4. Trees are planted for environmental and public relation purposes, fertilized by treated wastewater
5. Employees socialize in this recreation area
6. Trucks and cargo are stored in this garage

### Cemex: Internalization

Cemex exists in Assiut within an access area restricted to workers, materials, and distribution in typical fashion of factory facilities. However, the particular complex displays a high degree of internalization within closed boundaries. Centralised by the factory, the complex has established a sporting facility for its workers, and an area where necessary raw materials can be directly obtained on-site.



1



2



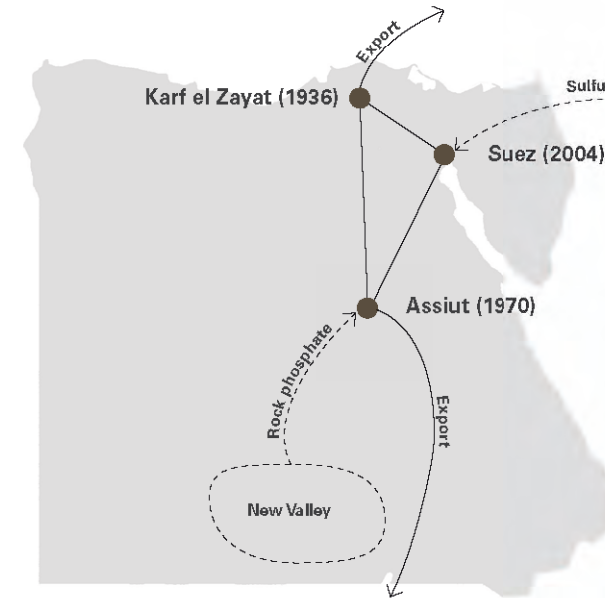
3



4

- 1-2. Private sporting facility and clubhouse for employees
3. The products are the only element released from the complex for Egypt-wide distribution
4. Cemex outlets are omnipresent in Egypt





1



2



2



3

1. The first branch to be established was in Kafra El Zayat in 1936. The factory's proximity to the ports provided easy access to imports such as sulfur, and also facilitated the export process. Problematic to that siting, however, was the location of primary ingredients, such as rock phosphate, which are mined in relatively distant New Valley and Aswan regions. Assiut's factory is sited to optimize proximity to both raw materials, and export opportunities to Saudi Arabia

2. On a local scale, the siting enables strong connections for distribution via roads and the railway. Large quantities of water are obtained directly from the river and used via turbines to produce 75% of the factory's power.

1. The company still uses the railway system as a means of transporting goods

2-3. The complex has a typical factory typology, with controlled entry and barriers surrounding the area



### Assiut Fertilizer Plant: Strategic Siting?

The plant was established in 1970 and is the second factory out of three company fertilizer plants established in Egypt. Acting as a source of revenue for Assiut, it is a prominent factory in the Nile Valley region. Factors of both national and local scales considerably influenced the factory's siting.



1



2



3



4

### Fertilizer Flood

The strategic siting of the factory does have negative consequences. The farms in the northeast area of the fertilizer plant are severely affected by the pollution which sometimes renders the produce inedible.

1. Neighboring villagers are affected by fertilizer pollution
2. The pollution from the fertiliser company is carried by the wind toward villages southeast of the factory
3. Crops are damaged and some products are not edible
4. Pollution harms neighboring farm productivity.



### Coca-Cola: Moving and Expanding

Embedded in the city fabric, the Coca-Cola company originally occupied one block of the grid in the new city area of Assiut. Bordered by four roads, the company was not able to expand into other parts of the city. With restricted physical growth and difficulty regarding access of recycled bottles and goods necessary for production, a proposed solution was to move company activities to a new industrial area of New Assiut. By relocating, the company is able to expand, modernise machinery to accommodate PET rather than glass, and consequently function more efficiently and extend its distribution reach.



1



2

1. Current location of Coca-Cola factory in its city context  
 2. New location in Industrial area of New Assiut out in the desert. Coca-Cola will be one of the pioneers of the this new industrial zone



1



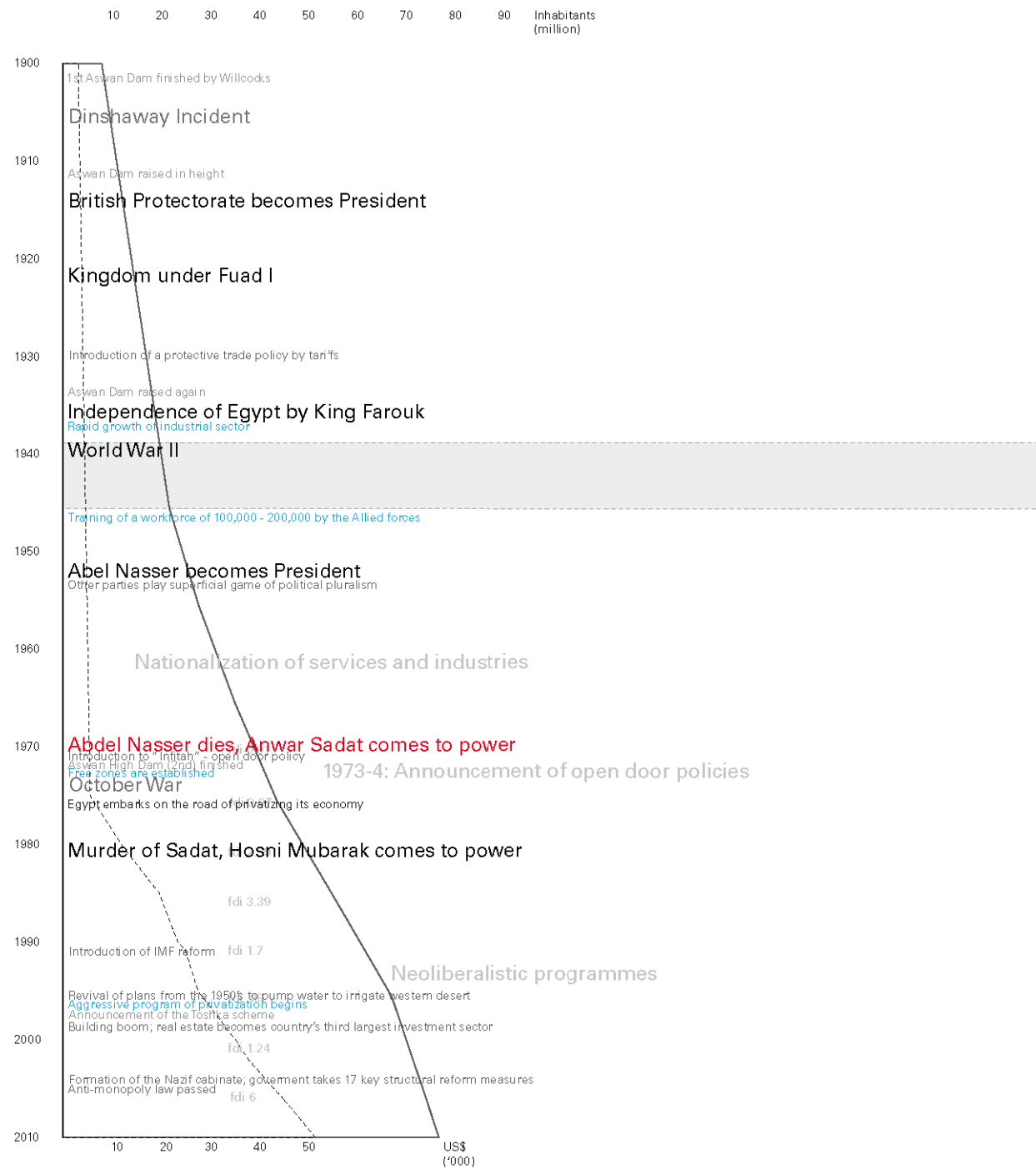
2

1. Upper East Assiut with the current position of Coca Cola  
 2. New position of the factory, with the new industrial area highlighted in red. Although it is far from the city, this area will enable the factory to expand and take advantage of cheap land prices. The company will organize a bus system for the 500 commuters from Assiut to New Assiut and back. By this expansion the company hopes to be able to distribute to other governorates as well as Assiut.



### **Bani Ghalib**

This area is an industrial zone northwest of the city of Assiut, part of the markaz of Manqabad. There are two such areas in the studied zone, and seven in the Assiut Governorate. Bani Ghalib covers an area equivalent of approximately a quarter of Assiut City, and is connected to resources and distribution on a national level via the national highways. The areas are established by the government and made attractive for enterprises via low land costs, relatively good infrastructure, and tax holidays.



### Industrial Strategies

Traditionally dependent on imports, Egypt has been following an import substitution strategy since the end of World War II. The goal was to push the country into independence from substantial world trade products, and finally to encourage export-oriented production. Therefore, several steps were undertaken to make industrial production flourish, including the introduction of a highly tariff-protected national market, as well as the launching of industrial areas by the governorates.



### Governorate Industrial Zones

90 such zones are established in Egypt, all placed in the desert. Many are empty; Bani Ghalib is an exception.



1



2



3



4



5

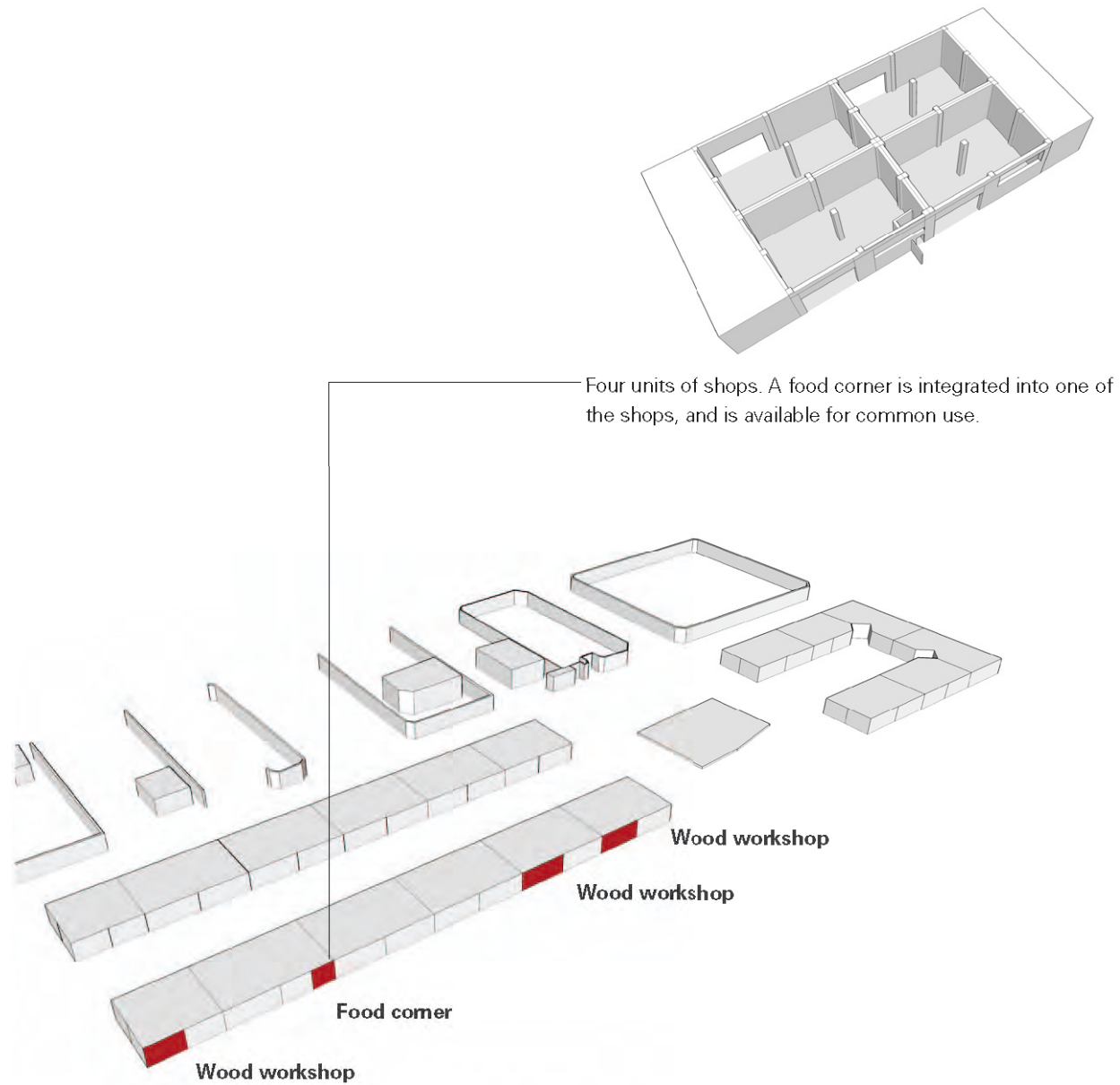


6

- 1. Furniture shop
- 2. Wheat grind
- 3. Marble grind
- 4. Plastic bags
- 5. Wooden door frames
- 6. Bricks

### Behavior Within the Grid

Bani Ghalib area shows a hybridization of both rationalized production and urban characteristics. For instance, the distribution area and its role in economical flow into Assiut is similar to that of larger-scale industrial productions while its internal organization exhibits similar social environments that exists in the city. The government also plays a large role in the area in its planning and infrastructure.



1



2



3

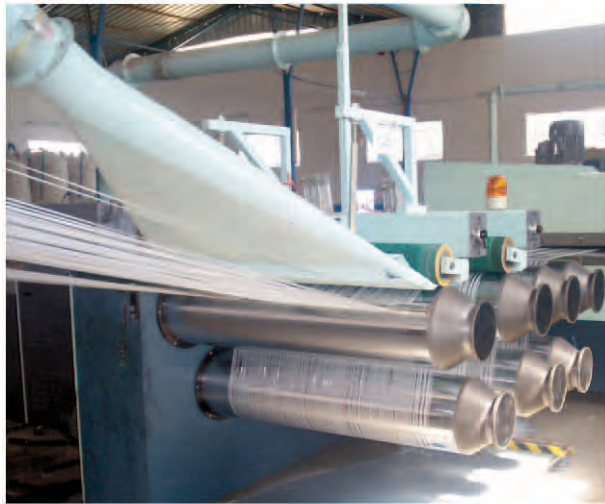


4

### Wooden Frame Workshops: Mimicking the City

The group of wooden workshops located near the south end of the area displays an urban typology; the method of production and area usage resemble that of wood workshops found in the city. A shared kitchen used by all the workshops fosters a strong social connection between the works. The structure itself was established by the government, illustrating state intent to provide the same facilities outside the city as can be found within.

- 1-2. Workshop typologies without external walls, and space in front which can be used as workshop space allows higher possibilities for social interaction
- 3. Workers from different establishments
- 4. Common kitchen for all the workshops



### Mechanized Production

The majority of industries established in the area are engaged in mechanized production. The factories produce vast amounts of single products in a cheap and efficient way, distributing them nationwide.



### Connections Within

Established in 2008, the wheat grinding plant produces flour for national distribution. The factory uses plastic bags produced by the plastic bag manufacturer in the industrial area. This kind of production chain is similar to what is found in the city, where one establishment obtains parts or materials from another.



### Marble Grinder: Moving In

This enterprise crushes marble for use in tiles, which is then made available for national distribution. Previously established in the New Valley governorate for eight years, the enterprise moved to Bani Ghalib to take advantage of cheap land prices, electricity, and water. The government also provided support to modernize the machines, and gave three years of tax holiday. The enterprise has shown no major changes and the establishment level remains the same as before.



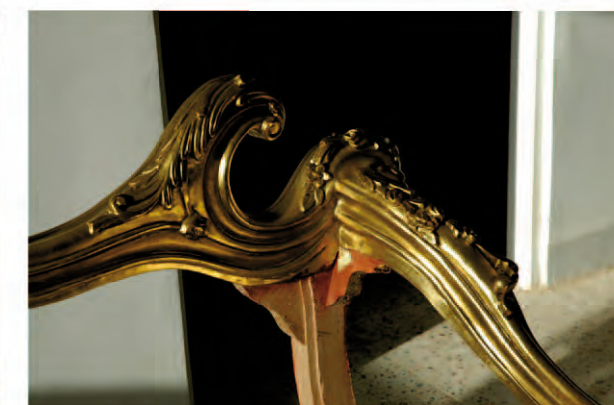


### High-end Production

The furniture shop investigated in Bani Ghalib illustrated that is more than just need-based production going on in Assiut. Although remaining to its traditional methods of hand craftsmanship, the establishment has expanded to the production of fine-crafted furniture. The extensive range available for selection in the showroom exemplifies that production is not only need-based, but also is evolving based on the willingness of the enterprise to adapt to changing environments.



The production line is done in separate steps on different levels in the building. From the first floor to the fifth, imported wood is converted to furniture. Each floor houses different stages of the process, and is worked on by different workers in specialised work rooms.

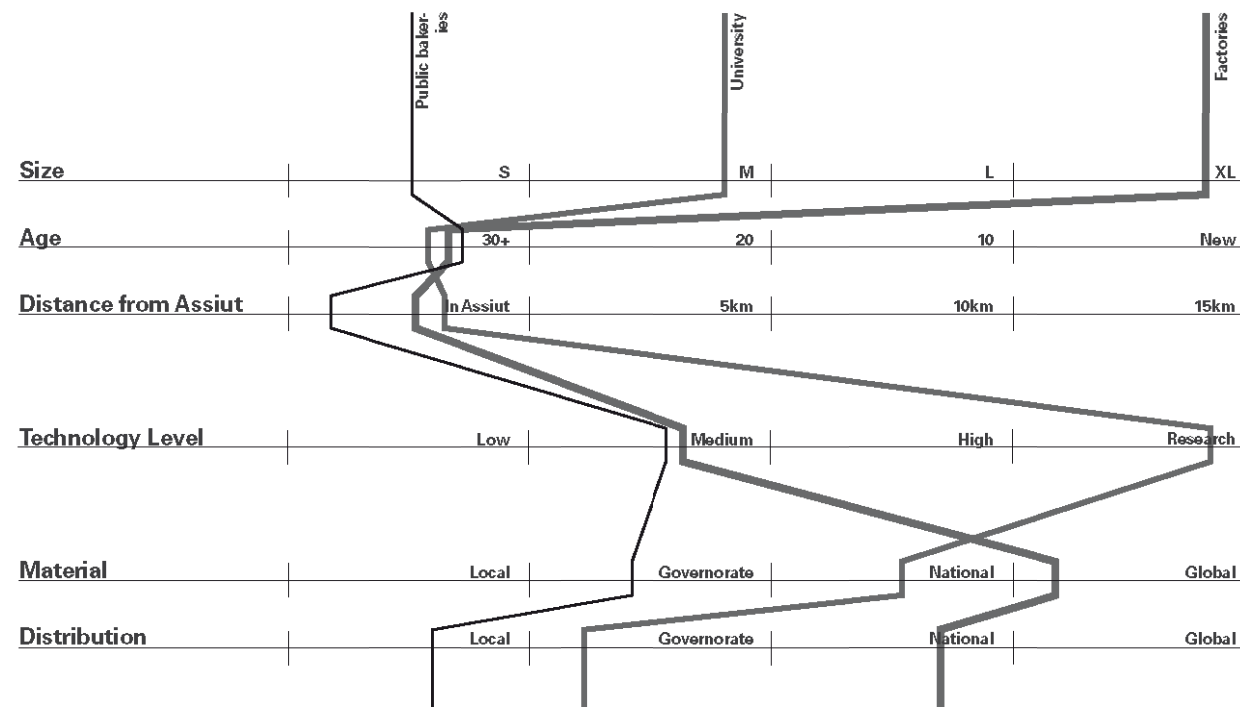
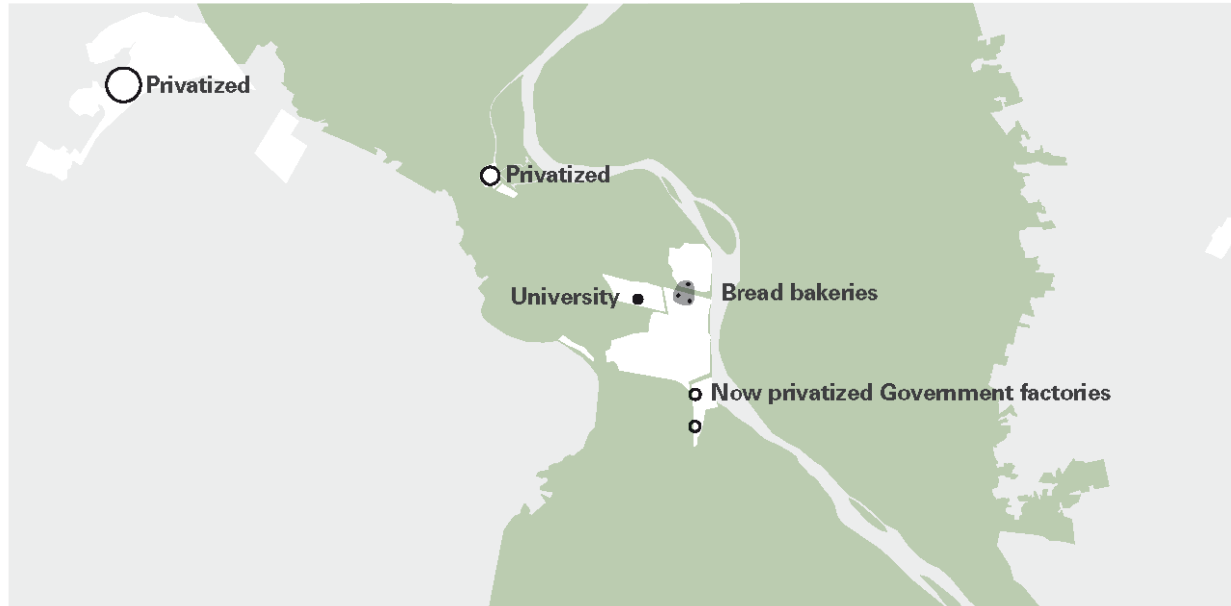


Different stages in the production line involve the production of the frame which is then carried to another floor. The furniture is plated with imported gold from France. The complex also includes a showroom with a sample of finished products.



# STATE-CONTROLLED PRODUCTION

State-controlled production exists in various scales, mainly large industrial plants. Most of them have been privatized in the past decades leaving only a few exceptional cases: workshops serving the University, and inner-city bakeries serving subsidized bread. Although the establishments seem to run inefficiently, they hold an important role in what they provide for society.



Most state-run production is now privatized; what remains is Assiut University and public bakeries. The University workshop produce exclusively for the campus, while the bakeries provide subsidized bread for the general public.



### Assiut University: Growing Flexibility

The university's production center employs 220 well-educated workers. From its establishment in 1957, the university has been producing and fixing furniture, electronics, canalizations and other items of everyday campus life. In 1980, it started engaging with students and graduates for private purposes. Today, the university receives orders from Cemex, Assiut petroleum and the Assiut fertilizer factory. Such outputs account for 20%, and recently the university even started supporting the Assiut administration in fixing public facilities. The university therefore exemplifies a self-sustainable zone that expanded as a reaction to its over-employment.



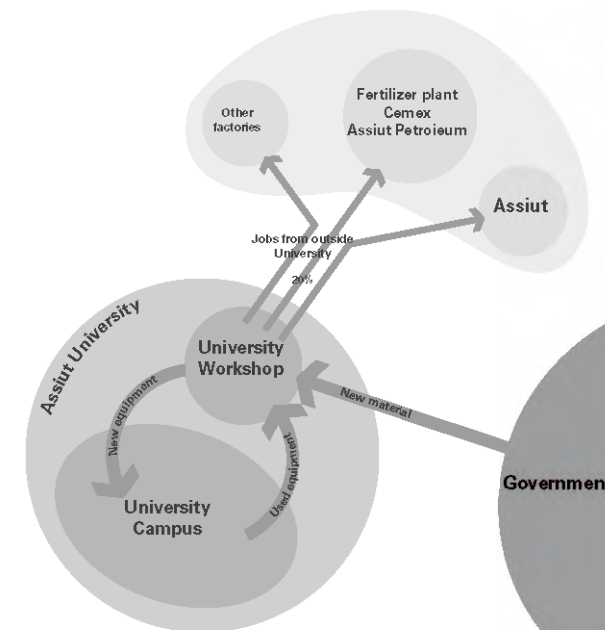
1



2



3



All of the companies served are formerly or still state-owned. The national educational employment policy guarantees employment for people with a high degree. Every graduate gets one feddan of land or has the right a public service job. The university is obviously participating in the policy to keep educated unemployment low.

1-2. All materials and used equipment are salvaged and stored for recycling. This method of vigorous recycling is similar to that of the workshops outside of the city  
 3. Used equipment are restored or improved using the extensive range of machinery available in the workshop



**Public Bread Bakeries: Balancing on the Necessary**

Subsidized bread production in small bakeries has been a governmental means to provide for basic needs of survival and at the same time keep calm amidst the many poor. However this national model in the present condition is limited; “bread riots” broke out in 2008, similar to the riots of 1977.



1



2



3



4

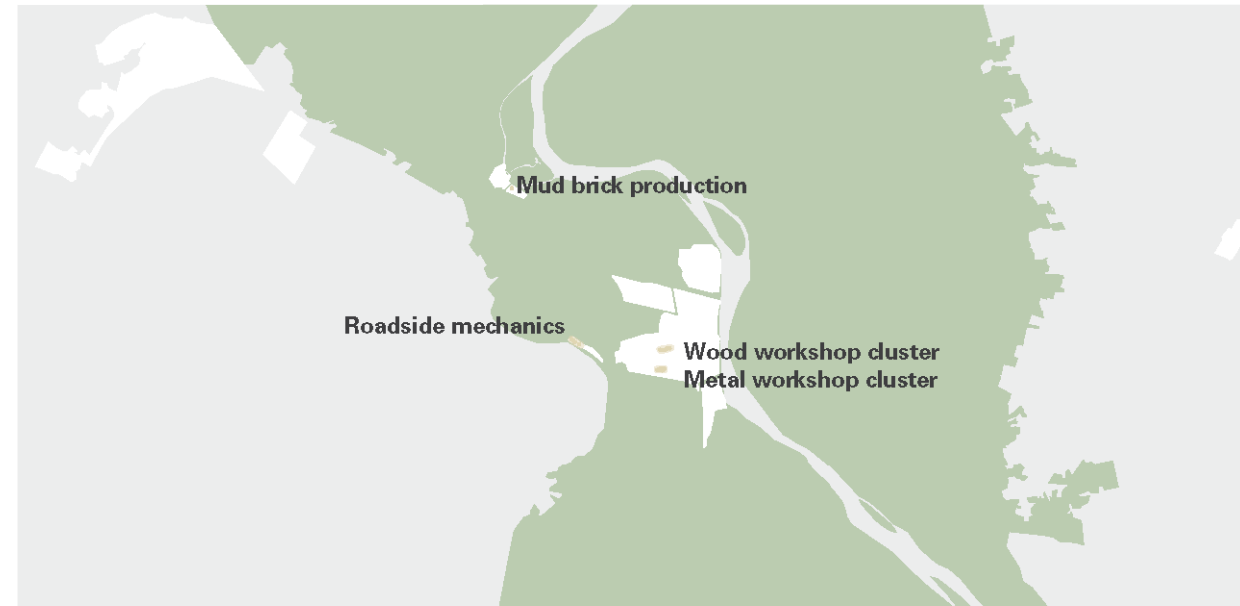
- 1-2. People waiting for bread distribution from the counter in the wooden box. The bakeries have been criticized for long waiting times, the common reason for violent outbreaks was rising of bread price
- 3. No unnecessary windows
- 4. Oven inside the factory; produces only one type of bread

# PRODUCTION BY DEMAND

In Assiut's city core, clusters of small workshops demonstrate significant production flexibility within their field. Highly integrated into the dense city fabric where the state's influence and control is low, most produce on demand-only basis, without driving any tendency: the products are not based on a catalog but rather produced on request. Deliveries and orders are often made by nearby merchants and customers; the resulting products are not actively distributed elsewhere.



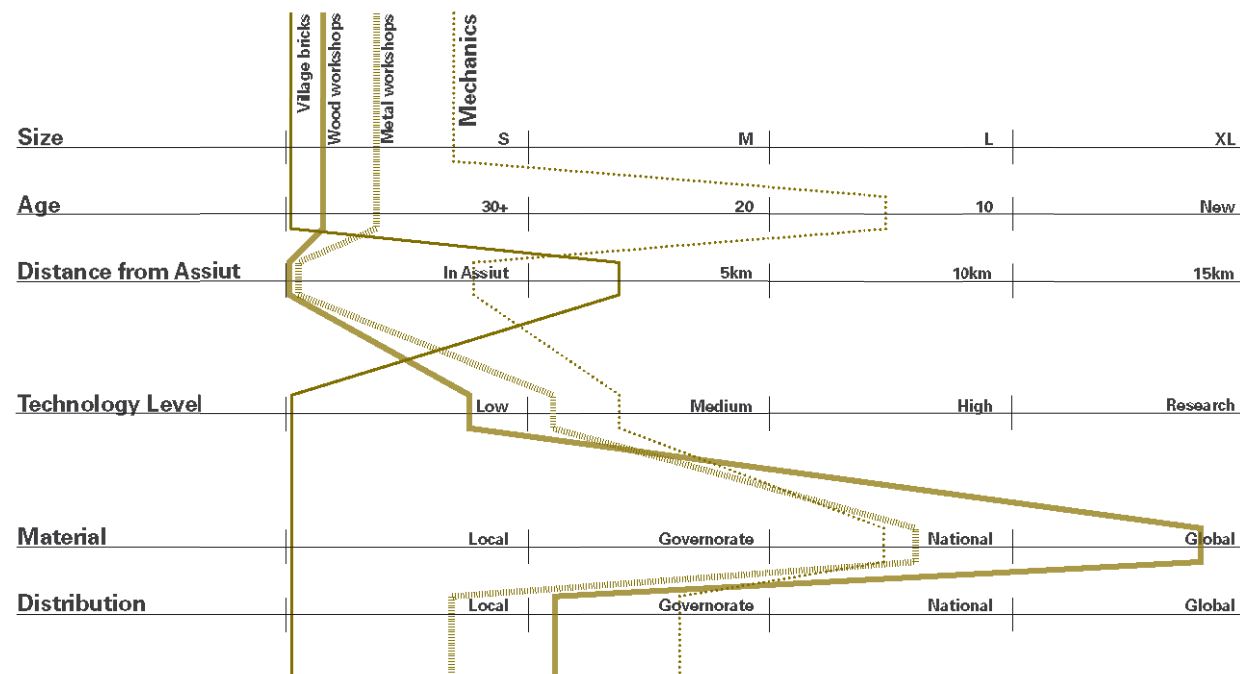
1



2



3

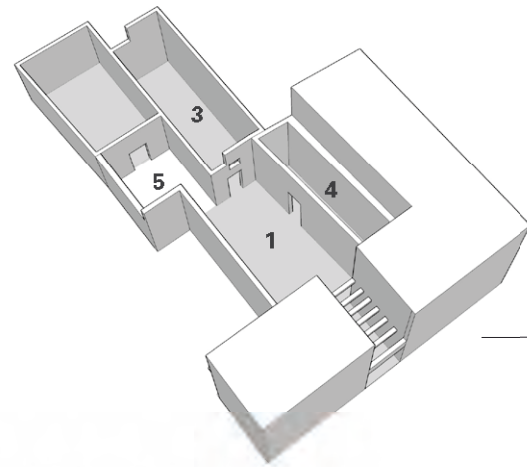


4



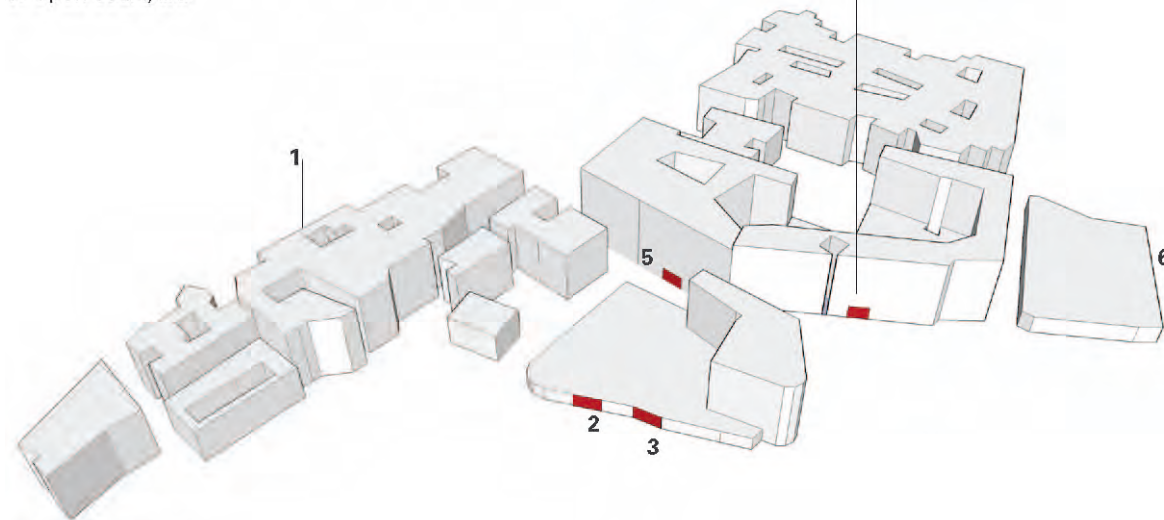
5

1. Workshops within and near the city
2. Mud brick production
3. Furniture workshops
4. Car re-production
5. Blacksmith



### Ala` Mahmud's Shop

- 1. Work room
- 2. Storage room
- 3. Room for machines; 1-3 are in the court; one story only
- 4. Room for finished doors
- 5. Open courtyard



- 1. Metal retailer (Eslam)
- 2. Blacksmith 1
- 3. Blacksmith 2
- 4. Wood workshop (Ala Mahmud)
- 5. Recycling of mechanical pieces through "redesign"
- 6. Car and Motorcycle mechanic

### Producing in the City Core

Past Assiut's traditional Bazaar Esserya, one finds a small workshop area in the south part of the city. The old grown structure of the quarter is half preserved with old buildings, but its newer half, composed of an upraised morphology of concrete skeleton, contains many small-scale productive enterprises—mainly furniture and metal works. Alleys are narrow and unpaved, making motorized traffic difficult, and facilities for water are often missing. But social connection is nowhere as specific as here.



2



3

1-2. The density of the city core offers qualities found nowhere else. Ala` Mahmud had his wood workshop in the industrial area of Bani Ghalib for ten years, but finally moved back to the city and bought this yard. His main incentives were the proximity of his family home to the workshop, social integration, and the variety found in the city, whereas life in Bani Ghalib was solely focused on work.

3. The bazaars are for retailing only, but few workshops have kept their traditional location. This man hammers aluminium vessels, a dying product, as prices for aluminium rose to record highs in 1989. Generally industrial mass-produced products dominate, rather than handcrafted goods.



### Blacksmith: City Network

Workshops in the city core are often organized into small networks which, in this case, mean a certain organized public within family enterprises. This network fosters a family-owned system of nodes in which every node is not only one step in the production process but is also a distribution point for others to purchase from.



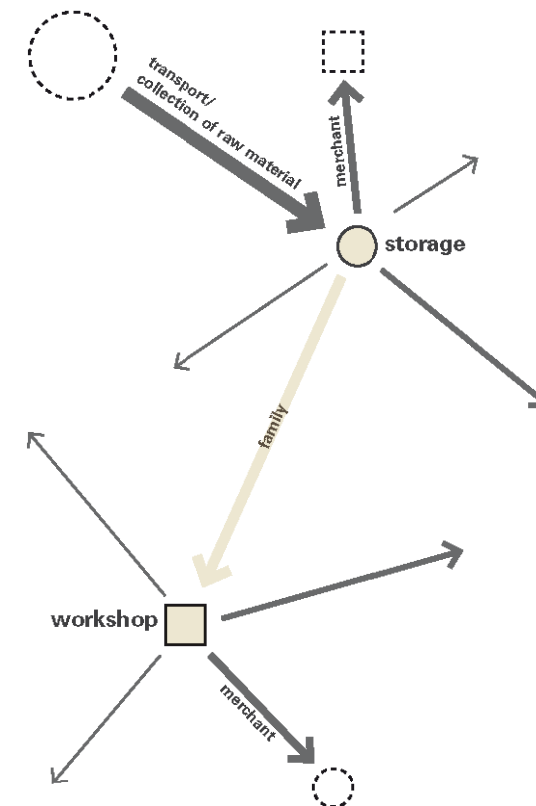
1



2



3



Every storage point also acts as a distribution point.

1-2. Islam's father owns a storage shop which at the same time acts as a retailer. He orders new and secondhand metals, from El Umraniya, a place in Cairo. In the 1960s, his grandfather, a blacksmith around the corner was the only "client". Now several merchants purchase from him.  
 3. Blacksmith. Electricity is only used for light in the evening; there is no water supply. The iron is treated by hammer and pliers on anvil. Steel is bought secondhand. The blacksmith produces based on client orders, mainly making tools for agriculture, iron doors and frames, and clamps.





1



2



3



4

### Furniture: Rationalization of the Artisan

The many small-scale furniture shops in Assiut, consisting of two to five employees, are part of a national system headquartered in Damietta. As done in Damietta, the process of furniture production is organized by a step by step process in which every family enterprise fulfills one step: from wood-cutting and carpentry to carving and upholstering; the furniture shops in Assiut are just the final step in a rationalized, artisan production over a great distance.

1. For an upper-middle-class clientèle, Caponate finishes two to three chairs per week in average
2. Clients choose from large catalogues with extensive choices; Caponate orders wood construction from Damietta, where one-fourth of Egyptian furniture production occurs
3. Damietta handmade frames in a shop near the bazaar
4. The textiles come from a small retailer



### Mud Bricks: Production Without Economy

In the village that suffers most from fertilizer pollution, we found the most traditional production method. Egyptians have been making bricks out of mud for millennia. This activity was illegalized by the government since it consumes arable soil vital for agriculture. But the production of bricks in the village show minimal regard for the law, and more consideration for their immediate needs.



### Behind the Plant

Illegal mud brick production in this size is an exception to the law, and this is known and accepted by the village's official administration, such as the Omda of Manqabad, the mayor, as an illegal activity. The difficult-to-reach, backyard-like locations catalyzes the continuing success of illegal activity and failure of government officials to halt it.



1

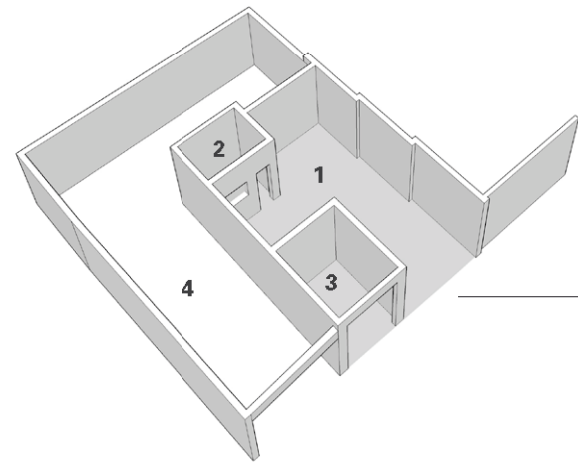


2



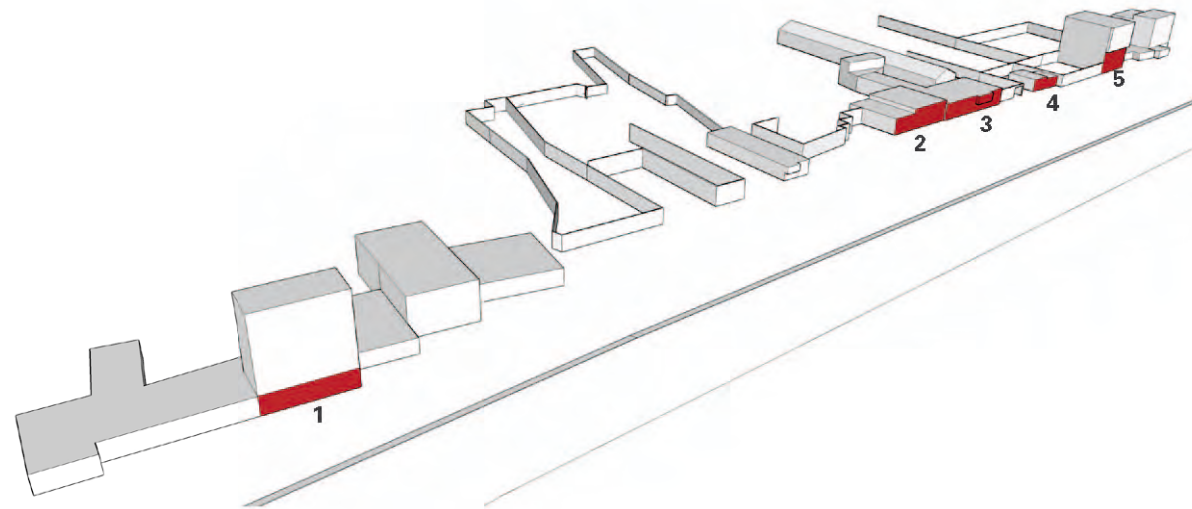
3

- 1. Production site
- 2. The fertilizer factory viewed from the mud heap
- 3. The village is only serving its own needs. The production is not income oriented, and no enterprise-like organizational structure exists. Collective work is organized by need itself.



### Mechanics

- 1. Work room
- 2. Room for tools
- 3. Bureau
- 4. Garage



- 1. Electricians
- 2. Chasis recycling
- 3. Chasy painting
- 4. Mechanics
- 5. Second hand importer

### Car Re-Production

Right outside the southern town lays a long line of informally-built one-story houses surrounding higher ones. Behind, the cupolas of the graveyard rise as if the houses were only the entrance to them. The houses compose a step-by-step production of cars, in a version of the city network adapted to the demands of mobility and a reach that extends into other parts of the governorate of Assiut.



The mechanics are located between a prominent road and graveyards along the edge of the valley.



1



2



3

### Chassis Painting: A Problem of Space and Reach

In 1988, this car-painting shop, obviously well-run, was one of the first of its kind to be established in this location, on agricultural land. In the city such shops are limited in their capacity to expand, due to limits on space and clientele. In this location along the road, the shop can have both.

1. Space and reach: Since its founding, the shop was enlarged several times. The width of the street provides a large public space for ease of deliveries.
2. Most clients want to renew the appearance of their car. But often, the shops also paint newly-fixed empty chassis which are later completed by fitting in engines, thus enabling a step-by-step production process.
3. Clients come from outside Assiut governorate. The sign visibly shows the shop's location and guarantee of quality.



**Chassis Recycling: Specialization**

Merchants recycle worn-out chassis, often cars involved in accidents. They hammer and weld these into a nearly new chassis by combining usable parts of two damaged cars. The shop is only the beginning of a longer production row, which begins with an almost unrecognizable chassis and ends with a new car. All shops here specialize in one step of the production stages.



**Mechanics: Brand Specialties**

The mechanic repairs mainly Mercedes lorries, but can fix anything if needed. Missing parts are bought from a Mercedes lorry part retailer right next door who mainly offers secondhand lorry cabins.



### Metabolizing Demand

Four different types of production serve different purpose in supporting the needs of the city. Agricultural, industrial, and state-driven productions contribute to economic flow into Assiut. Although present, this economy flow is not enough for the city which is counterbalanced by the efficiency of material use and re-use by the workshops within the city.

## SOURCES

### BOOKS

**Ikram, Khalid (1980). Egypt: Economic Management In a Period of Transition.**

Johns Hopkins University Press, Baltimore.

**Scharabi, Mohamed (1992): Industrie und Industriebau in Ägypten.**

E. Wasmuth, Tübingen.

**Mitchell, Timothy (2002): Rule of Experts.**

University of California Press, Berkeley.

**Oweiss, Ibrahim M. (1990): The Political Economy of Contemporary Egypt.**

Center for Contemporary Arab Studies, Washington, D.C.

### INTERNET

<http://devdata.worldbank.org/wdi2006/contents/Cover.htm>

<http://web.worldbank.org/>

<http://www.assiut.gov.eg/>

<http://www.asuit.gov.eg/>

<http://www.assiuttp.gov.eg/>

<http://www.capmas.gov.eg/>

<http://cdm.unfccc.int/UserManagement/FileStorage/LO-QSSQLBHR06HDCWLGPHC30OF8IX37>

<http://countrystudies.us/egypt/74.htm>

<http://devdata.worldbank.org/>

<http://globalis.gvu.unu.edu/>

<http://www.ifpri.org/pubs/ABSTRACT/ABSTR86.HTM>

<http://www.mfti.gov.eg/>

<http://www.nationsencyclopedia.com>

<http://www.zmag.org/znet/viewArticle/17349>

[http://news.bbc.co.uk/2/hi/middle\\_east/7936004.stm](http://news.bbc.co.uk/2/hi/middle_east/7936004.stm)

## IMAGE CREDITS

All graphics and photos by Oliver Muff and James Junkyung Yeo, except where noted.

P. 620

**Cemex**

Google Earth

P. 629

**Cemex Swimming Pool**

Google Earth

## ACKNOWLEDGMENTS

Ahmed Amer

Mohammed Fouad Sadek

Karema Abo Al Abass

Hala Abdeen

Dr. Ayman Hashem