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1. Introduction

One of today's undeniable facts is that cities are becoming the most common places where people live, even in the countries of the South. Moreover, in the North, transportation and communications are eliminating the limit between city and countryside, meaning the city's territory can expand disproportionately. The passage from a rural to an urban living environment, or *becoming a city-dweller*, entails a radical change in lifestyle in which individuals free themselves from the bonds of community, affirming the supremacy of the nuclear household over the extended family, and transforming their relation to space.

Urban agriculture, as an expression, was introduced in the 80's by agro-economists seeking a name for the illegal self-sufficiency gardening practiced by rural immigrants in cities of the South, a prerequisite for their survival as long as they could not buy food from markets. Its meaning was then extended to the various situations where food shortage crises are toned down with family gardening. At last, in 1997, Fleury and Donadieu proposed to further extend the semantic value of the expression to the various agricultural forms involved in the urban project, through multi-functionality and, notably, the landscape.

This article talks about the significant transformations of agriculture observed in cities of the South, even though, in many situations, food shortages persist: i/ changes in the organisation of the food industry, brought forth by the change in the scale of transactions; ii/ the role of agriculture in the process of becoming a city-dweller; iii/ the emergence of the multi-functionality of agriculture as a new city-agriculture relationship. Study results were obtained from A. Ba's and H. To's theses.

2. The transformation of the supply industry

Urban family gardening constitutes an adaptation of the rural self-sufficiency system to the city, and complements the merchant system in terms of food supply to citizens. Food supply is undergoing profound transformations because of the development of logistics and preservation, and access to the world market by countries of the South.

2.1. From a traditional system ...

Cities in the South still get their food supply through very local industries, which mobilise a multiplicity of players, each one coming from weak economic dimensions, though their poverty is not misery as their place in society is well-defined and stable. Small peri-urban family farms either sell directly in street markets, transporting their goods by bicycle or

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motorcycle (Hanoi) on a day-to-day basis, or delegate this commercial function to collectors that travel the peri-urban countryside, reselling the goods to merchants in the centre of town (in Western Africa, this is a mostly woman-based specialisation called Bana-banas).

As a consequence, the geography of productions remains organised in concentric isochronal circles because, with no preservation system, the quality of fragile goods depends on the time of transportation. The production systems (fresh vegetables and flowers) are also localised in the immediate periphery of the city in order to allow travel to and from the market within one day. Goods that better resist the trials of transportation are produced farther away.

2.2. ... to new supply systems ...

The dominant characteristic of these mutations is the change in spatial scale of the food supply and distribution system and of its corollaries: the greatest economic dimension and the specialisation of its various players.

2.2.1. The general organisation

At the core of the system are found the wholesale markets, created by private or municipal initiatives, and, more and more, by the major companies and their trading groups. They are relocated in the peripheral zones so as to be closer to the transportation systems (airports, road and railway networks). Distribution changes scale with the creation of super and hyper-markets, well-equipped in preservation systems and less dependent on a daily supply. These systems go hand in hand with very densely populated contemporary habitats and the automobile ethic.

Agricultural production must therefore reorganise itself, which is exactly what it is doing:

- by individual growth; To thus observe, in the farther periphery of Hanoi, farms engaged in a surface expansion process, in particular by renting land plots.
- By the development of private or cooperative intermediary organisations that insure coordination, pick-up, and standardisation of goods.

Consequently, a growing decoupling between far away specialised zones and large urban centres can be observed: the farthest peri-urban area around Hanoi, the Thies region 100 km away from Dakar, and the Bamileke country 400 km away from Yaounde contribute more to feeding large cities.

2.2.2. An example: how the Senoufo area feeds Abidjan (Ivory Coast)...

Fromageot (2007) illustrates these processes very well with his observations of the Senoufo area, found on the border between the Ivory Coast and Burkina-Faso, approximately 500 km from Abidjan and other coastal cities. Starting at the beginning of the 90's, seasonal dry season market production develops in the more humid areas. The variety of vegetables that is produced is extremely large, reflecting the diversity of contemporary consumer tastes in the large coastal cities: traditional varieties found in the Senoufo area, but also those specific to Abidjan, and those coming from other dietary habits (immigrants from rural regions, expatriates from the North, and new well-to-do social classes).

These Senoufo farmers had emigrated to where they could take part in the boom of commercial crops (coffee, cocoa on the coast, cotton in the interior), which were the foundation for the Ivory Coast's international specialties. The crisis surrounding these crops brought them back to their land, filled with new professional and commercial experiences. They could do this because they had maintained and developed their relations and commercial information system, very much based on the family, and used modern logistics (private trucking companies) made possible with the quality of the national road network.

2.3. ... with dramatic social consequences

The new systems disorganise the social structures of traditional supply routes; their economic efficiency engendered unemployment and loss of revenues for the smaller farmers and merchants. This is well illustrated by Wang et al (2006) when they show the antagonism there exists between the prosperity of the small peasantry, which benefited from the development of cities, and the prosperity of integrated commerce. However, in several years, the latter already provided more than a third of the dietary requirements of cities; it gets its supply farther away, from new zones of production.

Resulting from their increasing poverty, the actors of the old systems must, whether they like it or not, become citizens. Some countries, like Vietnam, remaining true to the spirit of its socialist options, promotes a policy of professional training in order to help the small rural actors go through this social mutation more easily, and limit the emergence of a phase of economic distress and social exclusion. This policy is linked to the rapid development brought forth by a widespread liberalisation of the economy.

Under what conditions can agriculture constitute an instrument for becoming a city-dweller in the countries of the South?

3. Agriculture and becoming a city-dweller

If becoming a city-dweller is often a deliberate choice on the part of young people, it is also a necessity, or at least an inevitable occurrence. The conditions are however very varied depending on the migrants' social positions. The poor generally benefit from family or ethnic group support, while country villagers incorporated in the spreading city have access to land rights and benefit from their previous urban experience.

3.1. The poor

3.1.1. Migrants of misery

In the last twenty years, poor countries in the South have seen mass migrations of rural populations due to wars, in some cases, or rural misery, in others. Emigration flows towards cities, which poses two immediate problems: finding somewhere to live and feeding oneself, while being confronted by often-hostile local populations. Authorities drive off squatters, but still, remain tied to social peace, all the more so since migrants also constitute a flexible and cheap labour force. Moreover, a more participative planning better legitimates their right to grow their own food, and indeed to establish themselves.

These poor immigrants thus resort to an often illegal and uncertain appropriation of free land. It is generally taken from zones that present either urban risks (next to airports or roads, on the periphery of waste treatment zones, etc.), or environmental risks (flooding, landslides, etc.) With low fertility rates, immigrants often resort to using urban waste, despite the sanitary risks (waste water, urban composts).

But they also participate in innovative projects. For example, in Dakar, there are increasingly more *microgardens*, a no soil growth system, used for two decades in North America to compensate the lack of gardening soil in poor neighbourhoods, and recuperate often-polluted industrial fallow land. Several hundreds of households use this subsistence gardening technique, which uses recuperated materials as containers for growing food. Only certain chemicals need be purchased, as is the public water service, if applicable.

3.1.2. Towards more entrepreneurial initiatives

Beyond self-sufficiency, these gardeners first seek to make some money by selling their surplus production, and then organise themselves to get access to the market. Some micro-gardeners promote the hygienic quality of their goods, grown without having recourse to restaurant or private wastewater. The same mindset can be found in Hanoi, where professional market gardeners sell more *clean* vegetables, produced with little chemical treatment and no waste water. Some consumers accept to pay more for sanitary security.

In Dakar, where Yaounde and, in other African cities, farmers created *ex nihilo* ornamental horticultural systems by using a similar no soil growth system. Installed along important roads, their goods sell well. Authorities are beginning to consider their multi-functionality because they use no-risk purified wastewater, and they contribute to making the roads look better. In Dakar, these are migrants from Senegal's old peanut producing area, ruined by international competition and desertification.

3.2. The city joins agriculture

3.2.1. An essential question: who owns the agricultural land rights?

In the South, the community often owns land rights, but they tend to become vague with urbanisation, especially when it coincides with land registration policies. Two opposed attitudes can be observed:

- the families of traditional leaders, often better educated, take hold of the new right by registering themselves as owners;
- the community is respected, its members negotiate new rights with it, in particular the right to build.

An analogous situation occurs in countries where, after a period when land is nationalised, steps towards restoration are taken. This is the case in Algeria, where agricultural land was nationalised in 1970, the land from the self-managed domains stemming from the colonial agrarian structure (3/4), and land from private Algerian property. The latter has been restored to its original Algerian owners in 1987; it still comes with a certain freedom of use, which is still refused to the rightful owners of the old self-managed domains.

3.2.2. Birth of a diffuse urbanisation

On their private property, peasant families act in two manners:

- First, members of the family add various secondary activities within the bonds of the rules of urban planning. Boudjenouia (thesis, 2007) observed in Setif the creation of carwash stations or the making of construction blocks, while Aubry et al observed in Antananarivo the setting up of traditional brick making workshops using clay coming from the bottom of rice fields.
- Second, the family cannot modify its right of use, but deliberately organises the dilution and non-reproduction of the farm. Food-producing agriculture is maintained in order to ease the urban mutation of the children that are fed and housed on the farm, but work elsewhere and do not want to come back to the agriculture.

To shows that most small farms outline real urbanisation trajectories for themselves based on the widespread Vietnamese rural model: small farms with a modest and very diversified production that is either used as subsistence, or sold locally in markets. She observes:

- Two types that react to the urban environment by specialising on high value added products such as meat (mainly pork, poultry), fragile leaf vegetables, ornamental or condimental plants, healthy vegetables (supra). These productions are substituted to rice,

which is a basic staple that might have to be bought. In the families' perspective, their farmland will be urbanised.

- A third type has already fallen into the city where farmers make most of their revenues. To observe strategies where farmers wait for property prices to rise, while they work the land at minimum cost (investment and labour), all the while visibly occupying it.

The farmers themselves thus largely support the process of becoming a city-dweller, since they find in it at once the lifestyle they are striving for and, with ground rent, financing for new activities or retirement. This process sometimes involves bypassing urban planning rules and regulations; a hidden real estate market exists, which feeds on citizens' long-term savings. We can see that the processes of urbanisation and of becoming a city-dweller mutually feed each other. The safeguard of open spaces, an essential element in the contemporary city, can only come from public action.

4. The emergence of new values: multi-functional peri-urban agriculture

An open space policy entails a durable management mode. This is why the concept of multi-functional agriculture is starting to be more widely shared. It is an urban fact, induced by an urban look at agricultural spaces and by society's acknowledgement of the capacity of agriculture to insure their permanence. In other words, agricultural management of the city's open spaces means fair relations between the city and agriculture, with shared governance.

4.1. The new values

They come from two principles found for the last few decades in urban policies. The first is that the open space now appears as a necessary component of the urban territory. Agriculture is valued by two functional necessities: feed the surrounding city, which is a function that will gain importance in the future with the re-evaluation of the environmental costs of transportation and be a less costly management tool of vast green areas of urbanisation, knowing that the forest, very valuable in North America, also plays this role. The second is the emergence of agricultural multi-functionality in new sectors. Even though the fair resolution of food issues remains the dominant finality of agriculture, the landscape or heritage are no longer considered as rich country luxuries, but a necessity for local development.

Concerning the countries of the South, this question is first that of the societal legitimacy of policies to subtract from urbanisation certain spaces in the name of their value as public property. This public property concerns:

- Certain well-placed social use sites, such as recreational areas or outdoor sports equipment;
- The collective heritage, coming from nature (biodiversity), history, etc. This clearly aims the local level, since places with worldwide appeal are already protected under international policies (nature networks, like MAB, or UNESCO world heritage sites).

For the moment, the processes analysed below suggest that ground rent remain the main driving force behind the expansion of the built fabric. Nonetheless, there are signs that show these new preoccupations are emerging, further laying the basis for the recognition that agriculture is multi-functional.

4.2. Examples of new heritage policies in the countries of the South

4.2.1. Dakar: nature as heritage object

The *Niayes*, meaning nature in the Ouolof language, are a series of humid bottomed depressions that run along the dunes found along the North-West coast of Senegal, from Dakar to Saint Louis. In this Sahelian country, they constitute veritable oases occupied by natural humid zones and, increasingly, market gardening. With the rapid expansion of Dakar, which tends to occupy the closest Niayes on the Cap Vert peninsula, authorities have put into place, since 2000, an innovative policy that considers Dakar's Niayes as a habitability and radiance for the metropolis.

The idea of protection appeared in the 70's, when the great Pikine Niaye was declared *non aedificandi*; agriculture was identified as floriculture and market gardening with, as a favourable factor, the availability of wastewater. However, there was barely anything done: public or private urban projects, legal and illegal, continued to eat up the Niaye with no regard for natural habitats and agriculture impoverished by clandestine boring in its aquifer, removal of sand, etc.

An outline project, PASDUNE, was also launched by the state, containing four strategic axes: spatial development of the agglomeration, agriculture, transportation, and biodiversity. But its application decrees remain faulty. The first concrete action to be done is a 10 ha park, which is currently being built. But its meaning remains ambiguous: is this the future gate to authentically protected Niayes, or only the preservation of a remnant, in anticipation of their total disappearance, notably of an agriculture that could have been multi-functional?

4.2.2. Hanoi: agrarian history as heritage object

An important expansion of the Vietnamese capital was planned for the end of the 20th century. The plan included, among other things, two great innovations: keep a vast green belt between the city centre and satellite agglomerations, and create heritage villages.

Agriculture in these villages would become multi-functional, clearly aimed at responding to new urban preoccupations. Traditional forms of agriculture would be maintained for heritage purposes; educational activities would be held there for the city-dwellers, children in particular. At the same time, traditional high added value agricultural products (fruits, flowers for traditional festivals, fish, etc.) would be encouraged. Leisure activities would also be held in these villages, which would become proximity tourist areas.

5. Conclusion: the conditions for sustainable urban agriculture

So, even in poor countries, agriculture seeps into the professional field of urban planning, and is no longer limited to the issue of supplying food to the poorest. This does not necessarily mean that the general convergence of urban policies has really been established, and neither has it been in the countries of the North, but signals the emergence of new questions.

The first deals with the nature of the points of view on the concerned spaces: do they reflect the existence of the current populations (specifically agricultural) or at least their memory, or are they idealistic or nostalgic reinventions of the urban world? This is a real conflict that puts at stake the policies. The second concerns the legitimacy of the objects of public policies. Can the dominant perception of heritage in the countries of the North be generally applied to the countries of the South, whose socio-political histories are radically different, as are their

cultural traditions? If actual experiences are shared, such as the one pushing for the reintegration of the urban decontamination policies within the process of sustainable agronomic management of fertility, is it the same for other more immaterial and identity-based values? At last, the pre-eminence of public policies is only really affirmed within certain state traditions. It is without a doubt present in Vietnam, at once as heritage from a socialist state, and as a necessary coherence when facing environmental risks (flooding of the Red River in Hanoi, for example), but it is not as present in most other poor countries where specific interests dominate.

Consequently, the necessity of defining the new shape of urban planning will impose itself with the acknowledgement of agricultural multi-functionality, that is to say the necessity of maintaining the functionality of agricultural spaces, without forgetting that this agriculture is first and foremost an economic activity.

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