The Atlas of Food. A space of representation, a place for policies, a methodology of territorial analysis

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Abstract
The proposed contribution presents the theoretical background, the aims and the design of a research-action which is being implemented by an interdisciplinary group of research based in Turin (Italy), including geographers, planners, IT experts, agronomists, designers.

The core of the project is the development of a methodology of analysis of urban food systems based on the realization of a multimedia, interactive, participatory Atlas of Food, centered on the city of Turin.

The general objective of the project is to develop and implement an interdisciplinary methodology of food system analysis and assessment, at the metropolitan scale, through traditional charts and maps, participatory mapping and a strict relationship with social networks, for field action.

The Atlas, which aims at being considered as a box for the collection and the production of knowledge about food in Turin, is divided into three main sections: a) a review of already existing maps and representations about the food system (a map of maps), which are critically reviewed and organized, in order to produce a catalogue of the different existing representations; b) a collection of static maps, specifically produced for the atlas, representing data about the food system coming both from official archives (e.g. census) and from users and actors of the food system. The static maps will be open to updates and corrections, following the suggestions of users; c) a platform for users-generated, dynamic, interactive maps, based on crowdmapping and the integration with social networks.

1. Introduction

This contribution describes the theoretical background and the operative program of a research-action project of an interdisciplinary group of research, including geographers, planners, IT experts, designers, agronomists, aiming at the development

1 The chapter is the product of the common work and reflection of the three authors. However, it is possible to attribute to Egidio Dansero the paragraph 4, to Giacomo Pettenati the paragraph 3 and to Alessia Toldo the paragraph 2.

2 Based at the University of Turin, the Politecnico of Turin and the University of Gastronomic Sciences of Slow Food, in Pollenzo.
of a methodology of analysis of urban food systems, focused on the city of Turin, in Northwestern Italy.

The proposed methodology, whose operational phase is starting while this paper is being written (January 2015), consists of the design and the implementation of a multimedia, interactive and participatory tool named “Atlas of Food”, aiming at representing the various elements of the food system, with the purpose to create a knowledge background for the actors of the system itself.

The territorial scope and the scales of the Atlas are not predetermined and vary according to the subject of the authors of the map or representation, creating each time new topological and topographical spatial scales, regions and connections.

The research-action program started from the following assumptions:
- the awareness of the lack of knowledge about food systems of most Italian cities, notably at the urban and metropolitan scale, since food is still considered a mostly "rural" topic (Dansero et al, 2014a)
- the lack of a methodology, aiming at setting a framework for the territorial analysis of urban food systems, which would be capable not only to look for a predicted knowledge, but to let also unexpected topics, questions and issues emerge
- the idea that the co-production of knowledge, through the tools of participatory cartography, neogeography, or crowdmapping – based on ICTs - could represent a fundamental part of knowledge based, participated and shared food policies (Feenstra, 2002 ; Morgan, 2009)
- the need to develop a cooperation between cities working on food system analysis and planning, in the North and in the South of the world, not only in order to transfer knowledge and methodologies, but mostly because local food systems are embedded in a global food system, whose main nodes are cities
- the crucial role of mapping, and notably of participatory mapping, in the study of local food systems

The following paragraphs will describe in detail the project and its potential operational follow-ups, contextualizing its design in the theoretical and political debate about food systems and food policies.

2. The choice of the city as the core of the Atlas of Food

Even if it could appear a non-sense, talking about food systems means talking about cities. The city, understood as metropolitan region, could be a useful scale for researching food systems and for planning and practicing policies and strategies aiming at changing them, for at least three reasons.

First, because cities are the main drivers of the global food system, defined as “the chain of activities connecting food production, processing, distribution, consumption, and waste management, as well as all the associated regulatory institutions and activities” (Pothukuchi and Kaufman, 2000 p. 113).

Secondly, only in apparently contradiction with the first reason, because cities are very weak facing a possible crisis of the food system at various scales (Morgan and Sonnino, 2010).
Third, because cities are already a scale of political action, where policies and strategies directly and indirectly addressed to the food system are developed and practiced. Of course, this premise does not mean to underestimate the importance of rural areas, not only as territories of production (of food, natural resources, leisure, etc.) surrounding the cities, nor as empty spaces crossed by the flows connecting the urban network at various scales, but as living territories, loaded of values, whose wealth and sustainable management is crucial for the global resilience and sustainability, at the environmental, social and economic level. The relationships between cities and (their) countryside are in fact an essential node of food global and local policies, a “paradigm […] bringing the concept of sustainability into new and more profound significance — that is, as an integrative policy tool that links human and environmental health” (FAO, 2011).

2.1 Cities as drivers of the global food system

Most of the people of the world, however, live today in urban areas (52.7 % in 2013, according to World Bank data) and most of the demand of food comes from cities. Cities are the places where the main decisions affecting the food system (and places where food is produced), concerning food production, consumption and supply are taken or addressed, by people working in business, finance, marketing, culture. The shape of cities, its localization, its growth and its flows are largely addressed by the need of food of its dwellers and one of the main functions of cities has always been the one of food market. Until few years ago, however, the food system has had a very low visibility in the urban planning debate and among urban policy makers, planners and city dwellers (Pothukuchi and Kaufman, 2000). The modernization brought to a progressive detachment of urban dwellers from food. The Fordist city based on factories and, then, the post-industrial city, based on the service industry, became – for what concerns food – mostly places of consumption, where the other phases of the food chain almost disappeared, at least in the collective consciousness. Most urban dwellers ignore where their food comes from, how it is produced and where their food waste will go and will be processed. What happened, according to one of the most common and clear descriptions of how food chains evolved in the last few decades, is that the globalized food system, driven by agro-food industry and concentrated retail, progressively de-territorialized food production, making of food a part of international commodities networks (Morgan et al. 2006). This new food geography has its own spatial organization, its territoriality and its landscapes, but it broke the traditional relationship between local food production and local food consumption. Johannes Wiskerke (2009) identifies three processes characterizing the dominant food system: disconnecting of producers, suppliers and consumers; disembending of food from its place of production, with its values and identities; disentwining of food related spheres of economy and life (e.g. food, care, education and leisure). Even if the most evident negative externalities of this corporate capital driven system
(such as low incomes for farmers, environmental pollution and ecological degradation, loss of biodiversity, food-related health diseases, food unsafety, etc.) are geographically distributed mostly outside urban areas, once again cities are the drivers of the territorialization of food, since its in urban areas that the demand and the cultural and economic models driving this system are allocated.

On the other side, it is mainly in the cities that practices and cultural movements contesting the conventional globalized agro-food system emerge (Holt-Giménez, 2011), notably when they perform explicit strategies of resistance, trying to shape alternative geographies of food (Wiskerke, 2009) and alternative food networks (Goodman et.al, 2012). These leading role of cities in addressing the debate about food has two reasons. The first is that, despite of the powderization of the possibility to produce culture, due to digital technologies and global instant communication systems, cities are still the places where culture and political movements are mostly produced. The second is that cities are at the same time the strongest and the weakest node of the global food system. Urban ecosystems are in fact very far from self-sufficiency and cities largely depend from importations of food generally produced somewhere else. In addiction, the just-in-time system of supply of big retailers situates big cities “nine meals from anarchy” (Simms, 2008), as in case of a stop of food flows towards the city it has been calculated that there would be no more than three days of food autonomy for city dwellers.

2.2 Cities as a scale of research and action

Moving to the third point, it is evident that the city (sometimes meant as city-region) is a scale to which food policies are developed and applied. Everywhere there are sector urban food policies, addressed to food production (urban and periurban agriculture), to food processing and retailing (industrial local policies, retail regulations, markets, etc.), to food consumption (public procurement, restaurants regulations, and so on), to post-consumption (food waste).

Several cities, though, especially in North America and in the UK, moved beyond these fragmented policies, developing urban food plans or integrated urban food strategies, trying to coordinate and integrate sector policies (Morgan, 2009). The scale of these policies is usually the city-region, which is often both a scale of government, ruled by supra-municipal metropolitan authorities (like the Italian newborn città metropolitana), and a scale of governance, as witnessed by the scale of most urban sector and integrated policies, rarely contained within the boundaries of one municipality (Salet et al, 2003).

In conclusion, the choice of the urban scale as the core of the Atlas of Food is due to the role of cities in structuring and addressing the food system at every scale and to the operational chances it presents, given the existence of political institutions acting at the metropolitan scale in most of big cities of the world. As already mentioned, the scale of each representation varies according to the aims and the subject, according to the idea that scales should not be seen as fixed spatial attributes, but as the product of processes, relations, actions (Swyngedouw, 1997).
3. The role of maps in researching and planning food systems

3.1 The power of maps

Maps are one of the most powerful, controversial and useful tools of territorial analysis. Not only are they able to synthetically represent a selection of facts, objects and flows happening in a place, at a given scale, highlighting the relationships and the connections between the objects on it, but the synthetic view they propose, let the observer move beyond phenomena, suggesting questions, solutions, directions.

The power of maps lies in the fact that they represent as objective an interpretation of the world. This can be true about any kind of representation: texts, paintings, photographs, movies (Bourdieu, 1988), but it is even more clear about maps, which aim to represent space “as it is”. According to the Swiss geographer Claude Raffestin, the space becomes the territory of an actor as soon as it is object of a social relationship based on communication (1980). The real implicit project (Dematteis, 1995) of cartographic representations is not only to describe the world, but to change the world itself through the images of it they present (Casti, 1998).

This is why mapping throughout history has been considered a fundamental step to control territories (Farinelli, 1992) and maps instruments of political and cultural power (Harley, 1988).

Of course, this does not mean that it is not possible to consider maps as representing objective data about a given phenomenon, but is is important to read maps critically, deconstructing their production (Harley, 1992).

The role of maps in representing and connecting spatially referred data makes of them a privileged tool of research-action (Pain, 2004) whose aim is not to produce a representation of the world which pretends to be objective, but to collect information and data, to interpret and represent them, offering theoretical and operational tools to actors, stakeholders and policy makers of the researched field (Magnaghi, 2001).

In recent years, the principle of participation gained an increasingly important role in the field of cartographic representation, through the emergence and diffusion of participatory mapping and crowdmapping. This methodologies are able to integrate the traditional top-down cartographic representations with bottom-up descriptions of phenomena and dynamics. Participatory mapping, which was originally based on traditional hard-copy maps, radically changed its nature with the diffusion of GIS, with the birth of the web 2.0 and, then, with the integration of the two.

According to some scholars, these technologies changed geography itself and the
definition of neogeography spread into the academic debate. Geography needed to reinvent itself in light of the diffusion of these technologies and geographers consider themselves no more as producers of top-down spatialized knowledge, which could directly come from citizens, but mainly as producers of methodologies of collection, analysis, evaluation, and use of bottom-up knowledge (Goodchild, 2009). The concept of neogeography can be considered a variegated field of debate characterized by a range of different epistemologies, however linked by keywords like web 2.0, mash-up, public participation, social networking, volunteered geographical information, crowd-sourced data, user generated contents, open source data, gps, and so on (Rana and Joliveau 2009).

Even is some scholars argued against the sameness of neogeography and democratization (Haklay, 2013), what is clear is that the divide between those who collect and those who use data is partly overcome.

One of the first participatory cartography examples in a territorial project comes from FAO (Burini, 2007), for the elaboration of the Community Forestry Field Manual (FAO, 1994), which was partly based on community elaborated maps supporting the experts analysis.

3.2 Maps in food studies

In the research about urban food systems, maps are largely present, with various degrees of bottom-up participation, notably when research supports public policies about food.

Maps of various kind are abundantly produced about every part of the food system: production, distribution, retail, consumption, waste. Here we point out four common fields of food studies where maps are specifically used as a tool of analysis and interpretation of facts.

Firstly, one of the most common cartographic representation is the map of the foodshed of a city or a region, related to the debate about local food systems, food miles, bioregionalism and food security. It is a clear example of the strict relationships between research, representation and action and of the double soul of maps, which are at the same time descriptive (where does the food we eat come from) and prescriptive (where should the food we eat come from) (Cantile, 1998), hence, particularly interesting for this discussion. The concept of foodshed was coined by W.P. Hedden in 1929, in a pioneering book entitled “How Great Cities are Fed” and reinterpreted by Arthur Getz in 1991. The main meaning of foodshed is the area from where the food which arrives to a city comes from. Obviously in the ’20s it was mostly a continuous region, surrounding the city, while nowadays it is a fragmented, networked archipelago of places stretching all over the world. Often the mapping of foodsheds is used in a political perspective, starting from the analogy with the watershed, that is the basin from where waters converging to a city come from, which should be as close as possible to the city and as preserved as possible by pollution and ecological degradation. Similarly, mapping the region(s) from where the food feeding the city comes from unveils the absurdity of some food flows and implicitly calls to the action in order to identify as a foodshed an area which is close to the city and consequently
should be preserved (Kloppenburg et al., 1996) as “fresh food reservoir”.

A second common aim of mapping in food studies is to correlate the spatial distribution of food supply and food demand at the local scale. Typically these maps are produced in order to find and localize the effects of poverty and deprivation on food consumption and the so called food deserts. Variously defined according to the geographical context (mainly in UK and USA) and the field of research, a “food desert” can be defined as “areas of relative exclusion where people experience physical and economic barriers to accessing healthy food” (Reisig and Hobbiss, 2000, p. 138), or those areas of cities where cheap, nutritious food is virtually unobtainable. Car-less residents, unable to reach out-of-town supermarkets, depend on the corner shop where prices are high, products are processed and fresh fruit and vegetables are poor or non-existent (The Independent, 11 June 1997; cited in Whitehead, 1998, p. 189).

Thirdly, maps could represent the topological (not always spatial) relationships between some elements of the territory. A typical example are actor-networks maps. This kind of maps are very useful in order to explore how processes and practices are characterized by relationships of spatial or non-spatial proximity and to identify links between the connections between actors, their networks and the territorialities they produce (Raffestin, 2012).

In the end, maps are sometimes used in food studies in an almost metaphoric, non-georeferred sense, capitalizing on the power of mapping as a conceptual tool for organizing facts. It is the case, for example, of maps of values, driving consumers’ choices about food (Baker et al, 2004), or of conceptual maps of categories mobilized into the food debate, such as the notion of “local” (Feagan, 2007). Even if this maps are not strictly spatial, they are related to space, because they explore how values can produce what Harvey defines as “relational space”.

Moving from research to policies, maps are commonly used as a support to food policies and food planning, both in the phase of context analysis and in the phase of planning and action, sustaining the idea that mapping and representing is an essential component of territorial projects (Dematteis, 1995). Maps are part of most urban and regional food plans and food charts, with the idea that the process of mapping a local food system itself, notably if it is a participatory process, could help to increase knowledge about the flows of food, to strengthen and multiply the links between the actors and the components of the food web, to build awareness among people (Messer, 2012).
3.3 From the map to the Atlas

If maps are a useful, complex and largely used tool for studying, researching and planning food systems, an atlas – which is the core of the project of research-action described here – is something more. Atlases are considered one of the most common “geographical books” and in the academic, educational and cultural market there are several examples of “atlases”, focused on diverse issues (one of the most interesting and popular example is the series of Atlases published by the French newspaper “Le Monde”). Nevertheless, there is still a lack of theoretical and operational debate about what is an atlas, why it can be considered different by an illustrated book with many maps and why it could be useful to produce an atlas of the food system, as a research
and planning tool.
The debate about cartographic communication, in fact, underestimates the differences in terms of functions, meaning and power of a systematic collection of maps, compared to a single map (Bonazzi, 1994).

From an epistemology point of view, passing from a series of maps to an atlas means to substitute the representation of various issues and themes with the attempt of a systematic analysis and representation of reality. On one hand, the atlas should be a case for a plurality of perspectives on facts, put together by a shared framework, on the other hand, it should be open to alternative paths of a customized, non-linear, multiscale fruition by the reader/user (Dansero and Segre, 2000). An Atlas, can then be defined as a systematic collection of cartographic and non cartographic representations, on various topics, selected and ordered according to a cognitive framework which gives sense to the collection, leaving the user free to change the order of information, choose personal itineraries among the representations, interpreting the information with new perspective, details and scales (ibid.).

The idea of an Atlas of the food system as a support for research and policy is not totally new, especially in the USA and UK debate. A work based at University of California, for example, makes a cartographic review of the global food system, highlighting international flows and disparities about food and agriculture (Millston and Lang, 2008).

A second recent very interesting example of atlas, which emphasizes participation, following the new participative trends of cartography and geography described above, is “Food: an atlas”, a crowd-sourced collection of maps coordinated and published by a group of researchers-activists called “guerrilla cartography”, which “fuses traditional cartography, poster art, infographics, and journalistic text blocking to render the map as a narrative device” (Jensen and Roy, 2013). Definitely a more policy-oriented case of atlas about food is the Food Environment Atlas of the United States Department of Agriculture Economic Research Service (USDA ERS) - which collects and maps statistics on three broad categories of food environment factors: food choices, health and well-being and community characteristics, aiming at stimulating research on the determinants of food choices and diet quality assembling statistics on food environment and at providing a spatial overview of a community's ability to access healthy food and its success in doing so4.

4. The Atlas of food: a methodology of territorial analysis of urban food systems supporting policies and producing knowledge

The project presented in this contribution moves from the debate and the background reviewed in the previous paragraphs, providing a new perspective in the use of mapping in food systems analysis and planning, notably in the Italian and non Anglo-Saxon context, through: (a) the development of the methodology of the atlas in a context where it was so far

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almost absent (b) the integration of various approaches to the representation of the food system, with the use of several different methodologies of representation (not only traditional maps, but also infographics, videos, photos, etc.); (c) the link between mapping and planning/developing strategies, seen as two inseparable parts of the same process of construction of awareness and strategies about the need of a sustainable, resilient, just food system; (d) the will to consider the atlas as an open toolbox, from where all the components of the food system can draw knowledge and to which the knowledge produced by the actors should flow.

The general objective of the project is to develop and implement an interdisciplinary methodology of food system analysis and assessment, at the metropolitan scale, through traditional charts and maps, participatory mapping and a strict relationship with social networks, notably an innovative social networks developed at the University of Turin (project First Life5), for field action, leading to an innovative interactive Atlas of Food, divided into three main sections:

- a review of already existing maps and representations about the food system (a map of maps), which are critically reviewed and organized, in order to produce a catalogue of the different existing representations;
- a collection of static maps, specifically produced for the atlas, representing data about the food system coming both from official archives (e.g. census) and from users and actors of the food system. The static maps will be open to updates and corrections, following the suggestions of users;
- a platform for users-generated, dynamic, interactive maps, based on crowdmapping and the integration with social networks. The aim of this section is both to give answers, about data and information which cannot be top-down produced and, mostly, to raise questions, making hidden topics, connections and information about food emerge.

The project of the Atlas of Food (in Italian, Atlante del Cibo) started from a multidisciplinary academic context (University of Turin, Politecnico of Turin and University of Gastronomic Sciences), but soon has become a crucial step and component of the process of design and development of the urban food strategies of the city of Turin (at the metropolitan scale), which is going towards the creation of a food commission aiming at making of the city an international model for the quality and the accessibility of food and of the urban food system a strategic asset of the future post-industrial city (Dansero et al, 2014b).

In Northwestern Italy, between Milan and the French borders, with a population of 900.000 (about 1.5 million, considering the urban metropolitan area), Turin is the fourth biggest Italian city for population.

Turin belongs to a territorial system where food is considered as a mature economic, social and cultural asset, which contributes to a regional development increasingly based on high-quality food production (wine, chocolate, nuts, cheese, etc.) and food and wine tourism, which are gradually taking the place of heavy industries in the economic system and in the discursive representations of the area. (Dansero et al, 2014).

5 http://legal-informatics.di.unito.it/firstlife/
The Atlas of Food of Turin, has the following aims:
- to provide an open access tool, collecting and representing data, information and ideas about the food system at the city-region scale;
- to support the public-private network which is working at the establishment of a food commission, through analysis of the food system, development of scenarios and suggestions for the food strategies, aiming at the enhancement of sustainability, equity, participation and resilience of the food system;
- to increase the awareness of the actors of the food web about food, fostering the visibility and sharing of the issues linked to the different phases of the food chain;
- to provide a platform where the stronger and weaker actors of the food chain can virtually meet, reciprocally know, share ideas, creating an opinion making critical mass able to address food policies;
- to monitor the food system regularly with a participatory approach, reporting changes, trends, opportunities and threats.

In the project of atlas, big importance is given to participation. As pointed out in the previous paragraphs, participation is considered fundamental in contemporary cartography, as it is the only way to integrate the top-down representations with other information which can be identified only with a bottom-up approach and with the involvement of people who are directly interested to the cartographically represented issues. This is particularly important in an analysis of the food system which aims at support policies, because it could let emerge representations, needs and knowledge also of weak actors of the food system (e.g. consumers or farmers), trying to highlight and foster their role in the system.

The information collected and produced by the Atlas (Figure 2) are organized following a double systematization.

The first, links the maps and representations to the different phases of the food chain: production, transformation, distribution, consumption and post-consumption (waste).

The second links the representations collected in the Atlas to the various issues into which the multidimensionality of the food system could be divided: education, culture, health, environment, equity, economic development, and so on.

Furthermore, a specific focus will be done about two components of the food system which are considered of particular relevance. The first is what we call “local food”, meaning with this general and sometimes abused definition the fresh and processed food (e.g. cheese, cured meats, baked products) sold by farmers' markets, shops or directly by producers, sometimes with the intermediation of collective purchasing groups. Local food, whose food miles vary according to the type of food and distribution is of specifically interest for the debate about the possible relationships between the (mostly) consuming city and the (mostly) producing rural areas which surround it, in a perspective of short food supply chain, community supported agriculture and even bioregionalism (Allen, 2010).

The second is “public food”, as we call food served in the canteens of schools, universities and public offices or in the city hospitals. The choice of this focus results from the idea of public procurement as one of the most relevant drivers of local economies, able to address the choices of local offer and distribution (in this case of food), stimulated by a significant local demand (Sonnino, 2009).
5. Conclusions

The project of Atlas of Food developed in Turin and presented in this contribution is now (January 2015) moving its first operational steps, following a long period of theoretical debate and political work aiming at link the Atlas to the political process of definition of metropolitan food strategies and institution of a food commission in Turin.

The idea behind the project, in fact, is that the production of knowledge should be not only a support to food policies, but a crucial step of food policies themselves. This is specifically true if they aim at enhance the equity, the resilience and the sustainability of the food system, through a participatory process, involving all the actors of the system.

The methodology presented here, although referring to the international debate about mapping, food policies and participation, has been developed and is being implemented in a specific geographical context (Italy), where the relationships between food, people and the territory are peculiar.
The hope, though, is that this methodology could be considered as a useful suggestion in other contexts, both in the North and in the South of the world, considering the power of representation and bottom-up participation in the definition of food policies as an universal value of democracy. In fact, a real participation is a necessary base for policies which do not reply the multiscalar power relations which characterize the contemporary food system, but which are able to effectively address the system towards greater equity, sustainability and resilience, involving and giving voice to those who are more weak in facing the challenges and threats of the “new food equation” (Morgan and Sonnino, 2010), such as food price surge, food insecurity, land conflicts and environmental degradation.

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