



DIGGING DEEPER

Bringing a systems approach to food systems

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Issues of scale

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October 2011 marked the 30th anniversary of the establishment of the first food policy council in the U.S., in Knoxville, Tennessee. In the intervening year I have spent some time thinking about the trajectory of food policy councils (FPCs) over those decades. What’s impressive is how active FPCs have been in addressing a wide range of policy topics across all sectors of the food system. The policies fall into different legal categories and funding mechanisms, and range from food production to food waste; from direct markets to large retail; from loans to plans. After

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three decades of FPC activity I find two things of particular interest about this phenomenon: first, the breadth of issues and the amount of human and economic resources going into the work of not only identifying policy changes but legislating and appropriating funds for them; and second, how much of this work is being done in isolation from similar undertakings around the country and even in the same state. It is the latter phenomenon that got me thinking about how to encourage more collaboration and efficiency in local or municipal FPC work. I decided that a useful way was to employ concepts that come from the world of systems thinking and analysis.

Although we work on and talk about food systems, we rarely apply a systems-level analysis to our projects. Of many useful systems concepts two seem particularly suited for looking at local food policy: one is scale, and the other is feedback loops (which I’ll take up in my next column). We know that a system contains nested scales, from the largest (i.e., global) down to local subscales. We also know but don’t often act on the fact that all food systems operate across many levels of management and analysis. Experts tell us that

scales have to be working together to successfully reach resilience in a community or a system of any size. Resilience, in brief, is the ability to survive disruptions without breakdowns in performance. The nested scales structure is what makes resilience of a complex system possible. But here's the kicker: this occurs only if the scales talk to each other! Not only do they have to communicate, but governance of a complex food system won't work without collaboration and people who share goals and a sense of purpose in working together.

I want to describe a few of the ways in which FPCs could address scale, using urban agriculture as my example. There is no argument about the many possible benefits of producing food in cities. And of course cities and towns in different parts of a country have different self-reliance thresholds. But I was concerned when I read a headline on a sustainability blog which trumpeted "cities could produce all their own food"! The authors of the study to which it referred made no such claim, but concluded that Cleveland, depending on the scenario chosen, could meet between 22 and 100 percent of fresh produce needs; 25 to 94 percent of poultry and egg needs; and 100 percent of honey needs. It could attain small levels of self-reliance — between 4 percent and 18 percent by weight, and between 2 and 7 percent by expenditures on total food and beverage consumption — compared to 0.1 percent at present (Grewal & Grewal, 2012). This is impressive, but begs a host of questions including those regarding the rest of the diet. Grewal and Grewal mention that grain production is less feasible in urban areas and much of the supply would have to be imported, but in their publication, and in many others discussions of local food efforts, there is no mention that the preferred diet takes 50 to 60 percent of its kilocalories from complex carbohydrates — mainly from grains. From where will those kilocalories come? Regions have different production capacities, so the answer

will vary a lot. A related question is what will be the cost of different urban agriculture scenarios and will it match the benefits? And over what time frame will some significant capacity of urban agriculture be attained? Answers to these research and policy questions are a good way to place some (flexible) boundaries around a local area and to frame discussions of what is a realistic level of self-reliance and at what scale that can be achieved.

I see these types of studies as doing the hard systems/engineering type of calculations. But pretty soon the sociological side needs to be engaged by the research community to answer a number of other questions beyond the calculations.

The first is do communities possess the human skills, resources, and especially inclinations to produce significant quantities of food in urban settings, or in smaller rural towns for that matter? (See a recent article in the *New York Times* (2012) that discusses the numbers of community gardens going without gardeners or with too few to be useful.) The second is how to seriously address the constraints on urban agriculture.

Papers by Lovell in the August

2010 *Sustainability* and by Reynolds in the *Journal of Agriculture, Food Systems, and Community Development* a year ago catalog these issues in a useful way.

Among the barriers are (1) limited access to land; (2) limited availability of suitable land for food production (solar and water access); (3) insufficient infrastructure; (4) seasonal limits; and, probably the biggest problem, (5) intense competition for other viable uses for urban spaces. There is a perception that agriculture is not a legitimate urban activity, although I'm not sure if everyone would agree with Tom Philpott that "nobody wants cows grazing on the Great Meadow in Central Park." I would like to see more systems analyses supporting urban production at different levels of intensity as a viable choice given food systems and food security gaps, and without undercutting peri-urban and rural farms.

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This brings up a final set of questions: how do urban and peri-urban agriculture interrelate? Cooperate? Compete with each other? The easy way out of answering this is to conflate them by defining them as the UN Food and Agriculture Organization (FAO) does, as the same thing (Smit, Ratta, & Nasr, 1996). I think that this is not a useful conceit in the United States because the history, economics, and self-definition of long-lived commercial farms outside of cities are quite different from farms situated inside them (especially if the latter are subsidized). In addition there appears to be little direct involvement of urban FPCs in farmland preservation activities. A recent compilation of multiple metropolitan comprehensive plans and food systems plans from all over the U.S. found only 11 that mentioned either farmland preservation or made specific connections to farmers in the region (Neuner, Kelly, & Raja, 2011). FPCs could be leaders in raising and encouraging research and action on these salient systems questions. In doing so they could enhance the possibility that the outcomes of their policy work are sound and more resilient over the long term. They would also benefit from increasing the size, scales, and diversity of their networks. 

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