

WE CAN'T KEEP EATING LIKE THIS:
FOOD SYSTEM CHANGE FOR SUSTAINABLE HEALTH

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We can't keep eating like this: food system change for sustainable health

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ABOUT THE AUTHOR



Born in Cape Town, Milla McLachlan attended schools in the city, as well as in Pretoria and Johannesburg, before receiving her undergraduate education at Stellenbosch University. She completed a PhD at Michigan State University in East Lansing in the USA, and recently completed an MA at Naropa University in Boulder, Colorado.

Milla has been involved in international social development for more than 30 years, focusing on addressing food and nutrition issues through public policy and community action. As Nutrition Advisor at the World Bank in Washington, DC, she supported policy and strategy development for national nutrition programmes in several countries, including Bangladesh and Ethiopia. She coordinated a team of eminent nutrition researchers in a review of the nutrition work of the World Bank and UNICEF, which led to the publication of an edited volume, *Combating Malnutrition: Time to Act*. This work contributed to the development of a renewed focus on nutrition in World Bank programmes.

Since her return to South Africa in 2006, Milla has consulted widely in Africa, building capacity for community-based action on nutrition and facilitating leadership- and partnership-building activities. With a particular interest in social change as it relates to food systems, Milla now enjoys navigating the interface between research, policy and practice through her leadership and involvement in the SU Food Security Initiative (FSI), the Community Nutrition Security Project of the SU Division of Human Nutrition, and the Southern African Food Lab, a multi-stakeholder initiative using social innovation to shift the food system towards greater sustainability.

DEDICATION

I dedicate this lecture to the memory of my mother, from whom I learned the meaning of food, and to my father, from whom I first learned about the food system.

WE CAN'T KEEP EATING LIKE THIS: FOOD SYSTEM CHANGE FOR SUSTAINABLE HEALTH

Continuing to eat in a way that undermines health, soil, energy resources and social justice cannot be sustained without eventually leading to a breakdown.

– Michael Pollen

We can't solve problems by using the same kind of thinking we used when we created them

– Albert Einstein, 1879–1955, physicist

We need to reconceptualize how food shapes our lives. We know we are what we eat, we need to realize that the world is also what we eat and we can use this idea as a powerful tool to shape the world better.

– Carolyn Steele

If you don't see yourself as part of the problem you can't be part of the solution.

– Adam Kahane

INTRODUCTION

Whether as citizens, professionals or academics, we are all deeply connected to the food system.¹ Rich or poor, old or young, we all must eat. Thus, it is fair to say that food security – having access to affordable, safe and nutritious food – “touches the core of what it means to be a human being”.² But all is not well with our eating. A recent GALLUP poll on food security in Africa found that nearly 60% of the respondents were vulnerable to hunger. Furthermore, there was an overwhelming consensus that food prices had increased sharply over recent months (Gallop World Poll, 2009). The current famine in Southern Somalia (where 750 000 people face death unless drastic action is taken) has again brought the images of starving children onto television and computer screens, sparking outrage and emergency action (BBC, 2011). In contrast, a 2010 article in Time magazine tells us that there are not enough doctors in the USA to treat the epidemic of obesity (Park, 2010). Closer to home, stories ranging from biodiversity loss and conditions on farms, to food price spikes and food safety scares, have become regular fare in newscasts and special reports.

There is no shortage of prescriptions on what ought to be done to address specific issues in the food system. Recent reviews on global agriculture and food systems provide rigorous analyses and strong recommendations for policy changes at local, national and international levels (Foresight, 2011; Oxfam, 2011). In South Africa, The National Planning Commission's Diagnostic Report gives dedicated attention to food security issues (NPC, 2011). Certainly, the media coverage of and renewed focus on agriculture, food and nutrition in national and international research programmes are to be welcomed. But do all our efforts add up? Are our research, policy recommendations and programmatic efforts sufficiently aligned to create the step change we need, given the urgency and complexity of the situation?

I spend much of my professional life (and a fair bit of my personal life as well) pondering these questions. After years of working in the field of nutrition and food security as an academic and policy analyst, both in South Africa and in the international development assistance system, I am coming to the conclusion that the way we have been working no longer works for me. We mostly operate in silos – nutritionists have difficulty

¹ The food system is broadly defined to include the entire food value chain, from agricultural input markets, through food production, processing, distribution, retail, consumption and waste handling, to regulatory functions and support services.

² Comment from participant in a workshop hosted by the SA FoodLab, 2010.

communicating with economists, agriculturalists seldom engage with rural sociologists, soil scientists and food chemists only meet on rare occasions. Although we advocate for participatory approaches, our efforts are still largely expert-driven. And we focus relentlessly on problems. The emphasis is on malnutrition, on hunger, on food insecurity and on what to do to overcome those challenges. I remain deeply committed to efforts to 'combat malnutrition' (I even edited a book with that title), to 'reduce food insecurity', and to 'fight hunger.' There is undoubtedly a place for problem-focused approaches, but I also find them exhausting, debilitating; in a word, energy-sapping. It seems to me that we have reduced a multi-faceted human cultural activity – that of cultivating, processing, preparing and enjoying food – to an intangible technical problem to be fixed. It no longer satisfies.

I now focus on linking up with people and processes that are approaching challenges in new ways. In the process my perspective on the subject has changed considerably, and I am excited about continuing to explore different approaches to working for change in the food system. I have come to understand food security as a complex social challenge, which requires innovation in how we approach studying and addressing it to create food systems that work for everyone. I firmly believe that our efforts to 'fight hunger' must be placed in the context of an inspiring framework that resonates with the felt experience and cultural meanings of food, while also focusing on the sciences of agriculture and nutrition and the complex systems we have created to maintain and regulate our eating. For me, this is captured in the notion of 'nourishment': ... a food system that nourishes.

In this paper I briefly review the 'state of our food systems' and propose that we align the system, and our work on it, with notions of sustainable health. I then introduce the concept of 'a food system that nourishes' as an organising framework for such realignment. I describe our work in the Southern Africa Food Lab (SAFL) as an example of the kind of innovations needed to support transformation in the food system, and I suggest that the Food Security Initiative can put Stellenbosch University at the forefront of efforts to create food systems that nourish. We have an opportunity to bring such nourishing systems into being through our scholarship, our teaching and our community engagement. And we can also do it through the everyday act of eating.

A FRAGILE AND FAILING FOOD SYSTEM

The process of industrialisation and technological development in the 20th century brought about enormous changes in the food system, including transformations in how and where food is grown, processed and distributed, and in the choices consumers make about where and what they will eat. Technological development, combined with modern management practices, has made food cheaper (notwithstanding food price spikes such as in the 1970s and again in 2008). This contributed to a decrease in the proportion of hungry people in the world (Godfray et al., 2010). However, the benefits from increased productivity and efficiency have been unequally distributed, and public health and food safety concerns are increasingly being voiced. Furthermore, the environmental impacts of intensive agriculture are now becoming evident, leading some to conclude that the food system is 'fragile and failing' (Lang, 2003; Oxfam, 2011).

The discourse on what is wrong with the current food system has been gathering momentum over the last decade. Following the food price crisis of 2008, which sparked peaceful protests and violent riots in several countries, references to a 'food crisis' have become commonplace (Oxfam, 2011; World Bank, n.d.). Countless reviews, scholarly meetings and journal articles document the multiple dimensions of the problems in our food system. Newspaper articles, websites and blogs depict interconnected crises of scarcity and excess, of want and waste, of imminent disaster and long-term decline.

While it is widely accepted that the world currently produces enough food to feed a growing world population, almost a billion people (925 million to be more precise) were deemed to be hungry in 2010. About 16% of the population in developing countries is classified as hungry, but in sub-Saharan Africa the proportion of hungry people reaches 30% (FAO, 2010). While famine in the Horn of Africa is a gross human rights violation, the estimated 171 million young children who suffer from chronic malnutrition worldwide represent a silent emergency of enormous proportions (De Onis, Blossner & Borghi, 2011). In addition, an estimated two billion people are vulnerable to the hidden hunger of micronutrient deficiencies (Micronutrient Initiative, 2009). There is a strong association between a lack of variety in the diet and risks of micronutrient deficiencies (Arimond et al., 2010). Readily preventable deficiencies of Vitamin A,

iron and iodine can cost African countries up to 2% of GDP per year in lost productivity and disability. One fifth of maternal deaths worldwide are due to iron deficiency anaemia (Micronutrient Initiative and UNICEF, n.d.).

In South Africa, in spite of strong government commitment to addressing development issues, food insecurity persists, particularly in rural and informal urban areas. National figures, which suggest that self-reported hunger declined from about 30% of all households in 2002 to 18% in 2008, mask large disparities between locations and household types. Female-headed households appear to be particularly affected by food insecurity (Jacobs, 2010). About one in five young children are chronically malnourished (Ardington & Case, 2009). Micronutrient malnutrition, particularly deficiencies of Vitamin A, iron and zinc, affects the health, growth and learning ability of young children and, ultimately, the productivity of the population. At the same time, and often in the same communities and households, overweight and obesity contribute significantly to the incidence of chronic diseases, including diabetes, cancers and coronary artery disease (Garrett & Ruel, 2005). While the economic cost of undernutrition is considerable, there is growing evidence that non-communicable diseases associated with poor diets and sedentary lifestyles can cause poverty and slow economic growth (Beaglehole et al., 2011).

The food system is thus not serving human health adequately at present. There is growing concern about how food systems are affected by, and contributing to, natural resource depletion and climate change, thus affecting environmental health as well. With a global population set to grow to about 9 billion by 2050, and increasing demand for processed and animal-based foods due to anticipated increases in wealth, the question is whether it will be possible to meet human food needs and aspirations, given the limits of the earth's resources, competing demands for land and water, and the impact of climate change and mitigation measures. The Millennium Ecosystem Assessment (2005) summarises the potential negative effects of food production that are not reflected in food prices. Among these are environmental pollution due to nutrient run-off, biodiversity loss and water shortages, and changes in ecosystems, for example due to overfishing. Agriculture is also a major source of greenhouse gasses such as methane and nitrous oxide, which are deemed to be more harmful than CO₂ (Millennium Ecosystem Assessment, 2005). Higher temperatures over much of sub-Saharan Africa, combined with declining soil moisture and more variable rainfall, are already making agriculture more challenging. Land degradation and desertification are two of South Africa's

most challenging environmental issues (Department of Environmental Affairs and Tourism, 2006).

Given these challenges, world leaders are beginning to recognise that ensuring that the world's growing population is able to feed itself in a sustainable and equitable manner is one of the major challenges of the 21st century (Anon, 2009). The question is whether our tools and techniques for addressing this challenge are adequate for the task.

A FOOD SYSTEM IN SUPPORT OF SUSTAINABLE HEALTH

The food security situation in South Africa, and in the world, exhibits many elements of a complex social challenge (Kahane, 2004). Such challenges are also called 'wicked problems' because they are difficult to define precisely and usually have multiple causes (Rittel & Webber, 1973). Food security is *socially complex*, meaning that there are many players and many (often opposing) perspectives that need to be accommodated in problem framing and resolution. For example, there are different perspectives on the role of biotechnology in achieving higher yields without further damage to the environment. Furthermore, there is no single 'solution' to a complex issue, and trade-offs and unforeseen consequences of proposed solutions are common. This means that food security is also *dynamically complex*; for example, the consequences of diverting funds from agricultural research and education may only be felt years later, when farmer support services collapse or are unable to assist farmers to adapt to changing weather conditions. Likewise, farmers adopt new techniques such as no-till farming because of its known effect on water and soil conservation, but its impact on carbon fixing or nitrous oxide emission is not yet known (Godfray et al., 2010). A challenge like food security is a moving target, as the conditions, as well as players, policies and related challenges, may all be changing as the problem is being addressed. Issues related to food security may be unfolding in unfamiliar and unpredictable ways due to major global or local shifts, such as rising demand for biofuels, or catastrophic events like major droughts or floods, demanding new and often untried responses. This is referred to as *generatively complexity*. Given that even our best models and surveillance systems are not geared to respond to such unpredictability, appropriate policy responses are not obvious.

In the face of such complexity, we need new frameworks and different change strategies. This challenge has also been recognised in the broader health arena.

Efforts to enhance the integration of animal, human and environmental health have gained momentum over the past decade. The barriers to implementing such approaches are not primarily technical, but rather social, cultural and political. To make progress, researchers, policy makers and programme implementers from different sectors and disciplines must begin to understand each other’s perspectives and motivations. Over the last few decades, researchers in the health and environmental sectors have started to develop integrated approaches to understanding the complex interrelationships between human and environmental health. The concept of ecosystem health has been used to draw attention to maintaining and restoring the world’s ecosystems as an essential component of addressing human health issues, while also acknowledging that human health is essential for environmental sustainability. Closely related to this, the ecohealth paradigm stresses the role of ecosystem management in improving human health. Ecohealth has three core elements, namely transdisciplinarity, social justice and gender equity, and stakeholder participation. Both approaches seek to understand the complex interactions between the components of the ecosystem (biophysical, socioeconomic and cultural) and how these influence human health (De Plaen & Kilelu, 2004).

Building on these ideas, I propose that we view the challenges of the food system through a lens of ‘sustainable health’. Such an approach can help us to keep human wellbeing, including physical health and nutrition, as well as the health of the planet in focus, building on a sound economic foundation without which neither human nor planetary health will be sustained. In what follows I propose an organising concept that could inform such an approach, and describe the strategies we employ in the Southern Africa Food Lab to facilitate the kind of cross-disciplinary and cross-sectoral learning that is needed.

A FOOD SYSTEM THAT NOURISHES

The word ‘nourishment’, like nutrition, refers, quite simply, to ‘providing with food or other substances necessary for life and growth’ (The Free Dictionary, n.d.). It can also refer to fostering the development of something or someone, caring, or keeping alive. It has the same roots as nurture and cultivate. A feminine word, perhaps, and obviously connected to food. But we know we are also nourished by good books and stimulating conversations, by beautiful things, and challenging tasks done well. Nourishment is the opposite of depletion, extraction, withholding. It is a word that suggests fullness

and sufficiency, rather than scarcity and want. It conjures up a rich, empowering, supportive, thriving system, whether it applies to what and how an individual eats, the development of a local food system, or the rethinking of the global food system. It draws its inspirations and images from nature, rather than machines, and so has real power as a source of new thinking about the food system. But it is not a soft word. It does not imply that economics is irrelevant, or that power and politics do not exist in the system. In fact, it is a term that ‘raises the bar’ for our evaluations of the food system, and demands of us that we find tools and indicators to measure the state of the food system not merely in terms of calories or financial outputs, but also in terms of human dignity, cultural diversity, social justice, and respect for the earth (Maxwell & Slater, 2004). Using this concept, I am reinterpreting my work in the world as contributing to the design of food systems that nourish, whether at the individual and household level, in communities, or at the national and even international level.

I propose that we use the notion of nourishment as an organising principle to inform a systemic approach to food security. Drawing on concepts from integral theory as applied to ecology, I identify four interrelated ‘terrains’ of the food system, and identify the variety of disciplinary approaches to and perspectives taken on the food system. Using the framework, we can begin to frame the broad contours of an approach to food security that is explicit about its aims and values (creating a system that nourishes), can operate at different levels (from the individual to the global system), and can focus on specific aspects, while bearing the broader system in mind. The four terrains relate to the individual (behaviours and experiences) and the collective (systems and culture) respectively (see Figure 1) (Esbjörn-Hargens & Zimmerman, 2009).

Figure 1: The four terrains of the food system

		Interiors	Exteriors		
Collective	Individual	Terrain of experience	Terrain of behaviour	Individual	Collective
	Collective	Terrain of culture	Terrain of systems		Collective

Source: Adapted from Esbjörn-Hargens & Zimmerman (2009)

We can thus begin to enact a food system that nourishes by giving attention to questions such as those included in Figure 2.

Figure 2: Creating food systems that nourish

<p>Experience</p> <p>In what ways do attitudes, emotions, feelings, perceptions enhance or inhibit ‘nourishment’?</p> <ul style="list-style-type: none"> • How do individuals in different circumstances experience their roles in the food system? • Where does power reside in the system? • What attitudes and assumptions contribute to wasting food? • Does the system enhance feelings of freedom or fear? • Do professionals connect their own eating and their work in the system? • Why do people respond to shocks (e.g. job losses) in the ways they do? • Does the system inspire creativity and artistic expression? • What psychological and emotional factors hinder participants in the food system from speaking out about their concerns and frustrations with the system? • How do individual preferences and values influence the selection of food system research programmes? 	<p>Behaviours</p> <p>In what way do behaviours and practices at different levels in the food system enhance or inhibit ‘nourishment’?</p> <ul style="list-style-type: none"> • Do poor people have access to a variety of nutritious food and do they choose to eat these foods? • Does participation in the system result in increased assets for poor people? • How do farming practices affect soil health, greenhouse gas emissions, water contamination? • How do consumer practices (e.g. recycling) contribute to ‘nourishment’? • How do people adapt their dietary practices due to different kinds of shocks? • How is power exercised in the food system?
<p>Culture</p> <p>In what ways do worldviews and collective perspectives of different groups enhance or inhibit ‘nourishment’ – for themselves and other groups?</p> <ul style="list-style-type: none"> • How do different cultural groups view food and farming? • How are debates about alternative approaches to food systems conducted in different settings? • How do different cultures understand food as a means to achieve social status? • Does the food system entrench or challenge gender inequity? • Does the system accommodate food rituals? • What aspects of academic culture influence priority setting in research on the food system? 	<p>Systems</p> <p>In what ways do physical and social systems enhance or inhibit ‘nourishment’?</p> <ul style="list-style-type: none"> • How do current and past economic policies affect food system outcomes? • What agricultural strategies can be justified given the lack of clear evidence on the environmental impact of alternative strategies? • How do current land-use policies (or the lack thereof) affect food security? • In what ways is the food system linked to national security? • What economic policies are needed for the food system to thrive? • What policies are in place to manage the impact of different food-related shocks? • What is the impact of infrastructure on ‘nourishment’? • How does the education system shape understandings of food security?

The proposed framework for rethinking the food system accommodates the complexity of the issue. Different ‘thought styles’³ contribute to the knowledge base in each of the four terrains. So, for example, ethnographic and sociological approaches would be used to study world views and values, while economics, political science and engineering, among others, contribute to our understanding of system dynamics that shape nourishment. Nutrition science, agricultural sciences, including soil science, animal and plant health, and economics contribute to our understandings of individual behaviour, whereas psychology, philosophy, literary critique and the humanities contribute to understanding the felt experience of food security. The challenge is, of course, to find effective ways to combine perspectives from these different thought styles to inform problem framing, agenda setting, decision making and action to address specific dimensions of food security. In the Southern Africa Food Lab, an initiative I started a few years ago in collaboration with Prof. Ralph Hamann of the UCT Graduate School of Business and colleagues at REOS Partners, we are learning how to do this. I now turn to a brief discussion of this initiative.

CREATING A NOURISHING FOOD SYSTEM

The Southern Africa Food Lab

The SAFL (www.SouthernAfricafoodlab.org) is a multi-stakeholder initiative that brings together diverse role-players in the regional food system to identify and pilot innovative means to help shift the food system onto a more sustainable and equitable path. The focus is on bringing about change in the food system through social innovation, including how stakeholders interact with each other and work together to prototype, pilot and institutionalise new activities in the system. Technical innovation may emerge, but is not the primary focus of the Lab. The Lab involves a range of different modes of

learning to harness the energy for change in the group, and to prototype innovations that could have a ripple effect throughout the food system. Team agendas and activities are driven by the interests of the stakeholders involved in the teams, and are in line with their core work goals and responsibilities. In the next section I provide a brief overview of the history and development of the Food Lab and the lessons I have learned through my involvement in leading the Lab.

The SAFL started as a one-year collaborative project, known as the Food Security Change Lab, to support systemic change for improved food security in South and Southern Africa by increasing meaningful collaboration in the system. It was created by a group of concerned stakeholders who came together in Johannesburg early in 2009 for a workshop entitled: “What will it take to ensure sustainable food security in South Africa?” About 70 participants from business, government and civil society attended this workshop, which concluded that improved cross-sector collaboration was vital for dealing with the many ‘stuck issues’ that impede system-wide improvements to food security in the region. A large majority of participants confirmed their commitment to contribute to such a collaborative process.

The SAFL is designed on the basis of the principles of Theory U (Scharmer, 2007),⁴ and modelled on an international initiative, the Sustainable Food Lab, which involves more than 70 global, regional and local organisations, including multinational organisations, NGOs and grassroots groups (www.sustainablefoodlab.org). The purpose of a Lab is to create an opportunity for a group of committed participants working on a complex social challenge, such as food security, to learn, reflect and create innovative responses together. In Phase I of the initial change lab we conducted dialogue interviews with 21 representatives of different parts of the food system, in which key challenges in the system were identified. The findings were synthesised and shared with the larger SAFL community. In the next phase, Lab

3 A thought style consists of a distinct body of knowledge (including theories, publications, texts used in teaching, etc.), as well as the ‘image of knowledge’ held by members of the thought community. This includes their beliefs about the role of science, the nature of truth and legitimate sources of knowledge. These images are not consciously taught to new members, and are seldom made explicit, but are absorbed through involvement in the thought community. A thought style also includes other values and assumptions that may be more generally held in the society. Thought styles do not only exist in the academic world, but other groups, such as religious groups, also have distinct thought styles. Furthermore, one can be a member of more than one thought community – foregrounding one thought style over another in different contexts.

4 For a detailed description of Theory U and the Change Lab process, and their application to food and nutrition, see McLachlan and Garrett (2008).

participants went on 'learning journeys', which focused on learning about the experiences of informal traders, fresh produce market managers, community activists and consumers in townships and poor neighbourhoods in Johannesburg and Cape Town, as well as commercial and small-scale farmers, community organisers and activists involved in school feeding and entrepreneurship development in Limpopo. Through these journeys, the participants could collectively experience parts of the food system that they did not know, acknowledge their own and others' varied perspectives on these food system elements, and begin to explore opportunities for innovation. Phase three consisted of a co-creating process, in which teams identified potential innovations and started to work together to implement them. This provided members the opportunity to shift from one mode of learning (through observation, data review and reflection) to another mode (learning by doing); to utilise the energy for change that already existed in the group as a result of the previous activities, and to prototype innovations that had the potential to have system-wide ripple effects.

The SAFL is currently in an institutionalisation phase. Several innovation groups are continuing their activities and we are consolidating activities around a number of core elements and activities, based on the principles of Theory U and the Change Lab process. These include, firstly, activities to support new ways of engaging with unknown parts of the food system, through immersion experiences such as learning journeys. Through direct engagement with people in the system, perspectives shift and new opportunities for action and change begin to emerge. Secondly, the Lab hosts activities to stimulate self-reflection and mutual learning among members of the Lab, as well as dialogue engagements with a broader range of stakeholders in the food system. These activities may include dialogue interviews to gain deeper insight into the perspectives of key role players; and public dialogue sessions on key issues to improve the quality of engagement and to move beyond polarised positions. A recent forum, for example, considered different perspectives on how the retail sector's sourcing decisions influence food security. These dialogues aim to build networks and shared understanding, not to reach conclusions or recommend firm action. Ultimately, these social innovations aim to shift the conversation about food security from a one-way engagement, in which 'experts' share their knowledge with a passive audience, to a more engaged interaction among all stakeholders in the system. Dialogue is also a key activity

in the context of workshops involving smaller groups (such as innovation teams), leading to the third element of the lab process, namely targeted, collaborative action based on a better understanding of leverage points, and mutual understanding, developed through the change lab processes.

The value of these activities lies firstly in creating greater understanding among the participants of the different perspectives that exist on particular food system issues, and facilitating a more systemic perspective on the problems with which they grapple every day. However, the Lab is not only a 'talk-shop'. In the relatively short time the groups had to work together, practical steps were taken that show potential for lasting impact. For example, the Lab facilitated communication between professional nutritionists and groups involved in food distribution activities. Together they were able to rapidly resolve questions regarding an appropriate basket of foods needed to meet consumers' nutritional needs and local tastes. Two teams focusing on approaches to providing support to new farmers to enter the market and all farmers to produce food more cost effectively and sustainably have established strong networks and laid a foundation for collaboration with researchers on systematic work to develop a more grounded understanding of the formidable challenges in this sector. Finally, through networks established in the Lab, the Human Rights Commission is embarking on an ambitious effort to build capacity in the media to address food security issues, and to create a more informed and involved citizenry on issues of food security.

Although we have only been active for a relatively short time, the Food Lab experience has provided important lessons on convening groups representing multiple perspectives and sectors, and on systemic approaches. At an individual level, letting go of one's disciplinary or sectoral perspectives, and seeing the system 'with new eyes', can be a challenge, particularly for experts. Nevertheless, participants in Lab activities have embraced the opportunity to do so, acknowledging 'blind spots' and expressing appreciation for the opportunity to do so.

For a systemic process of this nature to remain relevant to the participants and have a lasting impact, it is necessary to create and sustain a balance between thinking, talking, and action. Players in the system have different levels of capacity for and interests in developing conceptual understandings of problems, building personal relationships and professional networks, and taking concrete action, all of which are important for systemic

change to happen. Innovation teams are successful to the extent that members are personally interested in the issue, and it has direct relevance for their work.

We need to acknowledge the tension between strategies that seek to base action on a thorough understanding of established evidence of effectiveness, and more emergent approaches that develop a perspective of the system and then begin to 'live into the changes'. I believe this is an important area for further exploration. We need to create more opportunities for social and natural scientists from different disciplines to engage with each other around specific themes, and to understand each other's assumptions, frameworks and time scales. For example, soil scientists, plant geneticists, rural sociologists, agronomists, economists and nutritionists would bring different perspectives to questions regarding the role of indigenous crops in food security strategies. The perspectives of newly urbanised consumers, smallholder farmers and commercial farmers must also be heard, which adds another layer of complexity. Social innovations, such as the immersion and dialogue approaches used in the Food Lab, can assist in facilitating these processes.

Documenting and evaluating the process and impact of change initiatives such as the Food Lab are of critical importance to learn from the experience, and to create evidence to inform ongoing efforts to approach the challenges of systems change in innovative ways. This is an important area for future research, which itself requires innovation in methods and measurements. Through the Food Security Initiative at Stellenbosch University, which now hosts the SAFL, we can make a significant contribution to understanding these social change approaches and exploring the synergies between such efforts and formal research programmes. As argued in the next section, the FSI is indeed well positioned to play a leadership role in creating truly nourishing food systems through our scholarship, teaching and social engagement.

THE FOOD SECURITY INITIATIVE AT STELLENBOSCH UNIVERSITY

The Stellenbosch University Food Security Initiative (FSI) is structured to address food security in a comprehensive way. It is a multi-faculty research and postgraduate training initiative, structured to contribute to some of the strategic themes of the University's HOPE Project, namely addressing poverty, human dignity and health. The aim of the FSI is

to contribute to the emergence of a resilient, sustainable food system for Southern Africa, by reconceptualising the food security challenge, and creating new models of practice in the food system, through the integration of findings from in depth research on key issues in the food value chain, collaboration across disciplinary boundaries, capacity building and systematic impact assessment (Stellenbosch University, n.d.).

The objectives, project activities and faculties involved in the first phase of the FSI are summarised in Table 1.

As the complexity of the food security challenge requires, and on the recommendation of the Advisory Group, the FSI has now adopted a transdisciplinary approach, while it remains committed to drawing on the core strengths of the basic and applied sciences at SU. Transdisciplinarity is an approach that focuses explicitly on addressing socially relevant issues or wicked problems, through collaboration among different thought styles with the intent to resolve such problems – as they manifest at different scales – through participation and mutual learning. A project would be considered 'transdisciplinary' if it displays the following characteristics:

- It grasps the complexity of the issue under consideration
- It accommodates diverse perspectives on the issue and develops a shared conceptual framework among the participants
- It links abstract and case-specific knowledge
- It generates descriptive, normative and practical knowledge with the explicit intent to contribute to the common good
- Given that the 'common good' can mean different things to different people, assumptions and values must be made explicit and must be open for negotiation (Pohl, 2011).

This approach to transdisciplinary research redefines the process of 'problem solving' and leads to change in multiple domains, including changes in attitudes (on the part of academic and non-academic participants alike), changes in ownership of the project, competencies and capacities, institutional change and technological development. Going forward, the initiative can make a significant contribution to creating a 'nourishing food system' in South Africa and the region by pulling together knowledge from different disciplines in a systematic manner, and exploring innovative means to strengthen the relationships between researchers and decision makers in the food system.

Table 1: Objectives and activities of the Food Security Initiative

FSI objective	Project activities and outputs	Faculties and departments
1. Improve knowledge of the social, economic and political aspects of food and nutritional insecurity in Southern Africa.	Policy studies, focusing on climate change, role of agribusiness in achieving food security	AgriSciences: Agricultural Economics
	Social dynamics related to food security – how power, gender inequality, social networks, identity shape livelihoods, access and distribution of food , and implications of declining fish stocks on livelihoods	Social Sciences: Sociology and Social Anthropology
	Development of a regional and local food economy model, based on sustainability principles and an understanding of the political economy of local food systems	Development Management: Sustainability Institute
	Nutritional and food security assessments in rural and peri-urban communities	Health Sciences, AgriSciences: Human Nutrition; Agricultural Economics
2. Promote the utilisation of safe and nutritious food.	Nutritional assessment, local intervention studies and policy recommendations	Health Sciences, Human Nutrition
3. Empower small-scale farmers through appropriate new technologies.	Technology transfer and process improvement for emerging farmers, entrepreneurs and fisherfolk	Engineering
4. Reduce food losses in the farm-to-fork chain.	Waste reduction, including in animal source foods and postharvest technology (in plant production); also quantification of losses (including waste, quality and nutrient losses) along the value chain	AgriSciences: Horticulture; Animal Science
	Biotechnology solutions – antimicrobial agents to prevent crop losses	Engineering
5. Improve crop production and water-use efficiency.	Soil fertility management, combining chemistry, physics, microbiology, ecology	AgriSciences: Soil Science
	Improving crop production efficiency: technical systems development for crop and water supply monitoring	Engineering
6. Understand environmental and climatic changes and their implications for agricultural policy and practice.	Policy studies, focusing on climate change, role of agribusiness in achieving food security	AgriSciences: Agricultural Economics
	Biodiversity and water systems modelling, using multi-disciplinary analysis of complex systems	Engineering

CONCLUSION

In this paper I have argued that the complex challenges we face in the food system require us to shift how we think about it, and how we approach creating a system that works for everyone. The current food system is characterised by gross inequality, with almost a billion people worldwide at risk of food insecurity, while an estimated 30 to 40% of food bought by affluent households ends up in garbage cans (Godfray et al., 2010). Both undernutrition and obesity are consequences of unhealthy diets, of unhealthy diets, lowering productivity and taxing health systems in rich and poor countries alike. The environmental costs of an agricultural system that relies on fossil fuel energy, threatens biodiversity by expanding into forests and grasslands, and generates greenhouse gasses are vast, as are the effects of climate change and rising fuel prices on production systems, particularly in Africa. In South Africa, unresolved land reform issues, neglect of agricultural research and farmer support, and a lack of security in rural areas continue to plague food production, giving rise to concerns that national food security could come under threat. Calls for 'system redesign' are no longer restricted to a marginal minority of social and environmental activists. Government and private sector leaders are joining nongovernmental organisations and concerned citizens in calling for 'food system redesign'.

I have suggested that the food system we create must be measured by its contribution to sustainable health. As reflected in various new initiatives linking human and animal health (e.g. the EcoHealth initiative), sustainable health includes human health, soil health, plant health and animal health – thus healthy people, economies and ecosystems.

I have proposed that we adopt the notion of 'a nourishing food system' as an organising principle for rethinking the food system we want, and beginning to create it wherever we are. I have demonstrated how such a model would assist with reframing the issues in constructive terms, without losing the rigor of critical thinking on aspects of the system. It can also serve to give more prominence to the psychological and cultural dimensions of the food system, aspects that are under-researched and vital for building mutual understanding of what we expect of our food systems and the factors that influence decision making – whether at the personal, interpersonal or systemic level. I then described the Southern Africa Food Lab as an example of the kinds of innovations that can be found in how we work towards a food system that nourishes. The SAFL brings people with different (even opposing) perspectives and from different sectors together to see the system in a new way, and to prototype and pilot new ways of doing things in the food system, thus creating models of what can work to give us the food system we want.

Finally, I have argued that the Food Security Initiative at Stellenbosch University provides us the opportunity – here and now – to enact a food system that nourishes. We have the opportunity to develop the model, develop research programmes that build on and further strengthen basic, applied and transdisciplinary research capacity at the University, while engaging with partners in the public and private sector in innovative ways. At the same time, we can take these ideas into our cafeterias, student residences and homes.... The nourishing food system can thus also be created as we speak and work for it.

REFERENCES

- Anon. 2009. "L'Aquila" joint statement on global food security [Online]. Available: http://www.g8italia2009.it/static/G8_Allegato/LAquila_Joint_Statement_on_Global_Food_Security%5B1%5D,0.pdf (Accessed September 17, 2011).
- Ardington, C. & Case, A. 2009. *National income dynamics study (NIDS). Health: Analysis of the NIDS wave 1 dataset*. Discussion paper no. 2. South Africa: The Presidency Republic of South Africa and SALDRU [Online]. Available: <http://www.nids.uct.ac.za/home/> (Accessed September 20, 2011).
- Arimond, M., Wiesmann, D., Becquey, E., Carriquiry, A., Daniels, M.C., Deitchler, M., Fanou-Fogny, N., Joseph, M.L., Kennedy, G., Martin-Prevel, Y. & Torheim, L.E. 2010. Simple food group diversity indicators predict micronutrient adequacy of women's diets in 5 diverse resource-poor settings. *Journal of Nutrition* 140(11): 2059S–2069S.
- BBC. 2011. East Africa Hunger Crisis. <http://www.bbc.co.uk/news/world-africa-14248278> (Accessed September 17, 2011).
- Beaglehole, R., Bonita, R., Horton, R., Adams, C., Alleyne, G., Asaria, P., et al. 2011. Priority actions for the non-communicable disease crisis. *The Lancet*. 377:1438-47.
- Department of Environmental Affairs and Tourism. 2006. *State of the Environment Report*. Pretoria: Department of Environmental Affairs and Tourism.
- De Plaen, R. & Kilelu, C. 2004. From multiple voices to a common language: ecosystem approaches to human health as an emerging paradigm. *EcoHealth* 1 (Suppl. 2): 8–15.
- De Onis, M., Blossner, M. & Borghi, E. 2011. Prevalence and trends of stunting among pre-school children, 1990-2020. *Public Health Nutrition* [Online]. DOI: 10.1017/S1368980011001315. Published online by Cambridge University Press on 14 July.
- Esbjörn-Hargens, S. & Zimmerman, M.E. 2009. *Integral ecology*. London: Integral Books.
- FAO. 2010. *The state of food insecurity in the world: addressing food insecurity in protracted crises*. Rome: Food and Agricultural Organization of the United Nations [Online]. <http://www.fao.org/docrep/013/i1683e/i1683e.pdf> (Accessed September 27, 2011).
- Foresight. 2011. *The future of food and farming*. London: The Government Office for Science [Online]. Available: <http://www.bis.gov.uk/Foresight> (Accessed June 25, 2011).
- Gallup World Poll. 2009. In: Tortora, B. 2011. *Recent trends in food security: scale, impact and vulnerability: a perspective from sub-Saharan Africans*. Gallup Social and Economic Analysis [Online]. Available: www.gallup.com (Accessed September 27, 2011).
- Garrett, J. & Ruel, M. 2005. The co-existence of child undernutrition and maternal overweight: prevalence, hypotheses, and policy and program implications. *Maternal and Child Nutrition* 1(3): 185–196.
- Godfray, H.C.J., Beddington, J.R., Crute, I.R., Haddad, L., Lawrence, D., Muir, J.F., Pretty, J., Robinson, S., Thomas, S.M. & Toulman, C. 2010. Food security: the challenge of feeding 9 billion people. *Science* 327: 812–818.
- Jacobs, P. 2010. Household food insecurity, rapid food price inflation and the economic downturn in South Africa. *Agenda* 35: 38–51.
- Kahane, A. 2004. *Solving tough problems*. San Francisco: Berrett-Koehler Publishers.
- Lang, T. 2003. Food industrialisation and food power: implications for food governance. *Development Policy Review* 21(5-6): 555–568.
- Maxwell, S. & Slater, R. 2003. Food policy old and new. *Development Policy Review* 21(5-6): 531–553.
- McLachlan, M. & Garrett, J. 2008. Nutrition change strategies: the new frontier. *Public Health Nutrition* 11(10): 1063–1075.
- Micronutrient Initiative and UNICEF. n.d. *Vitamin and mineral deficiencies: a partnership drive to end hidden hunger in Sub-Saharan Africa* [Online]. Available: <http://www.micronutrient.org/CMFiles/PubLib/Report-66-VMD-A-Part-drive-to-end-hidden-hunger-in-Sub-Saharan-Africa|NJF-3242008-6203.pdf> . (Accessed September 27, 2011).
- Micronutrient Initiative. 2009. *Investing in the future: a united call to action on vitamin and mineral deficiencies*. Global Report 2009 [Online]. Available: http://www.who.int/vmnis/publications/investing_in_the_future.pdf. (Accessed September 27, 2011).

- Millennium Ecosystem Assessment. 2005. *Ecosystems and human well-being. Synthesis*. Washington DC: Island Press [Online]. Available: <http://www.maweb.org/documents/document.356.aspx.pdf> (Accessed September 20, 2011).
- NPC (National Planning Commission). 2009. *Diagnostic overview* [Online]. Available: <http://www.npconline.co.za/pebble.asp?relid=206> (Accessed September 27, 2011).
- Oxfam. 2011. *Growing a better future: food justice in a resource-constrained world* [Online]. Available: www.oxfam.org/grow (Accessed June 25, 2011).
- Park, A. 2010. Why we get fat: seeking clues in our cells [Online]. Available: http://www.time.com/time/specials/packages/article/0,28804,1972947_1973044_1973046,00.html#ixzzlZBJEaN5C (Accessed September 25, 2010).
- Pohl, C. 2011. What is progress in transdisciplinary research? *Futures* 43: 618–626.
- Rittel, H.W.J. & Webber, M.M. 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4(2): 155–169.
- Scharmer C.O. 2007. *Theory U. Leading from the future as it emerges*. Cambridge, MA. Society for Organizational Learning.
- Stellenbosch University. n.d. Food Security Initiative. Available: <http://www.sun.ac.za/foodsecurity> (Accessed September 12, 2011).
- The Free Dictionary. n.d. 'Nourishment' [Online]. Available: <http://www.thefreedictionary.com/nourish> (Accessed September 12, 2011).
- World Bank. n.d. Food Crisis. [Online]. Available: <http://www.worldbank.org/foodcrisis/> (Accessed September 16, 2011).