DESIGNING FOR FOOD AND AGRICULTURE: Recent Explorations at Ryerson University

June Komisar, Joe Nasr & Mark Gorgolewski

Abstract

Strategies to enable alternative urban food systems cannot be developed alone by those involved with the production and distribution aspects of food systems. It is important for architects, landscape designers and planners to be part of the process of conceiving and implementing innovative food-system thinking. Environmentally focused building standards and models for sustainable communities can easily incorporate farmers' markets, greenhouses, edible landscapes, permeable paving, green roofs, community gardens, and permaculture and other food-related strategies that complement energy generation and conservation, green roofs, living walls, and other approaches that have been more commonly part of sustainable built-environment initiatives.

Recently, architecture faculty and students at Ryerson University in Toronto and at a number of other universities have been exploring the intersection of these disciplines and interests. This paper will show how Ryerson tackled agricultural and food issues as design challenges in projects that included first-year community investigations, student-run design competitions, third-year studio projects and complex final-year thesis projects. These projects that dealt with food issues proved to be excellent entry points for addressing a range of design challenges including social inclusion, cultural context, community design and sustainable building practices.

Keywords: Design Pedagogy, Design Strategies, Productive Landscapes, Urban Agriculture, Urban Food.

Thesis project of Jordan Edmonds: "Urban Barn"

INTRODUCTION

Despite the significance of the food sector's function in cities,[1] architecture and related disciplines (landscape architecture, planning, and urban design) have not, until recently, given much thought to the roles they can offer to food production, distribution and related issues.[2] At the same time, the emerging alternative-food movement has barely engaged with the possible contributions that design and planning professions and processes can bring to the reintroduction of food systems into urban space. Yet the physical and spatial aspects of urban food production, distribution, provision and marketing are where food issues interface with urban planning and design. Despite constraints that range from zoning restrictions to construction codes, opportunities exist for a creative cooperation between planning and design professionals and those who focus on urban agricultural and food systems. What architects can bring to the table is a vision of the design possibilities that incorporate and facilitate access to food sources, for both nourishment and gratification.

The built environment and food policy intersect at the point where professionals of the built environment incorporate farmers' markets, greenhouses, edible landscapes, and community gardens into design and planning programs. Such examples of the connections between food issues and built form have the potential to transform not only the components of the food system, but also basic assumptions about the nature of programming required in the plans for urbanized areas and the designs for buildings such as schools, housing, and other places where food production or consumption occurs. The increasing emphasis on sustainable design and planning, through programs such as LEED (Leadership in Energy and Environmental Design), incorporates innovative energy approaches, water-saving irrigation, green roofs, living walls, and other elements that are compatible with policies for more sustainable food and agriculture systems.

On the planning side, the process that has led to the recent adoption of food systems by professional bodies has been expanding gradually for a number of years, culminating in the American Planning Association's new Policy Guide on Community and Regional Food Planning (American Planning Association 2007). On the architecture side, the discovery of food by architects has been more recent, as some designers (including many students) have begun to embrace food as a new area where they can intervene as professionals. This discovery will be evoked here, focusing on the recent explorations by architecture students at Ryerson University who have tackled agricultural and food issues as design challenges, in projects ranging from first-year community investigations, through student-run design competitions, up to complex final-year thesis projects.

These explorations, first presented publicly in Toronto in April 2007 in a session within a series called "Food for Talk",[3] are at the center of this paper. Introducing food professionals to the architectural perspective on food production was the aim of the "Food for Talk" event, but it also served to introduce food issues to other architectural students who had not taken part in these explorations. This area is an important part of sustainable design and provides a rich opportunity for forging new partnerships.

PEDAGOGY OF FOOD AND DESIGN

In which ways do different urban patterns influence how and where urban residents farm, acquire food, consume it? This type of question was part of what a research project at McGill University, called "Making the Edible Landscape"[4] attempted to address. On the other side of the Atlantic, a major contribution was made in this area through the publication of a book called CPULs: Continuous Productive Urban Landscapes (Viljoen et al. 2005).

Until 2005, these two path-breaking activities had been quite exceptional, standing out as

[1] An excellent analysis of this question is provided in Steel 2008.

[2] Questions of urban food supply were in fact accorded great important by some of the early theorizers of modern urbanism, including Patrick Geddes and Frank Lloyd Wright. This is brought out most vividly in the case of Ebenezer Howard's "Garden City" - one of the theories that lie at the foundations of the modern planning movement. A good overview of Howard's ideas and diagrams is provided at http://www.library.cornell.edu/Reps/DOCS/howard.htm. The reason the centrality of food questions to modern planning vanished over time remains to be elucidated in future research.

[3] The title of that session was the same as that of the present paper.

[4] For information on the Making the Edible Landscape Project, run out of McGill University's Minimum Cost Housing Group (within the School of Architecture), see http://www.mcgill.ca/mchg/pastproject/edible-landscape/.

attempts to consider what designers can bring to questions around urban food systems.[5] In the span of a couple of years, architectural responses to such questions have suddenly emerged in various corners of the earth. In particular, it is in architecture schools that the nexus between design and food materialized as an area of investigation. It began to be explored, not only at Ryerson University, but also within a number of architecture programs in North America, Europe, and Australia.

Similarly themed projects are thus happening at various levels of instruction at other architecture programs. In the UK, for several years now, Andre Viljoen and Katrin Bohn, the authors of the above-cited CPULs book, have been tackling in design studios at the School of Architecture and Design, University of Brighton, the incorporation of food production in architectural form.[6] In the spring of 2007, at the Boston Architectural College, students participated in a design/build studio, constructing a shelter in an urban allotment garden.[7] At Lawrence Technological University, Professor Joongsub Kim led a studio that was centered on developing a sustainable urban agriculture-based community master plan for Detroit.[8] In New York City, professors of the Parsons School of Design have collaborated with ones at the New School for Liberal Arts on several projects, some with actual clients.[9] In France, two schools in Versailles that do not have a history of collaboration, the Ecole Nationale Supérieure d'Architecture and the Ecole Nationale Supérieure du Paysage, have come together in a semester-long workshop centered on periurban agriculture matters, run by Luc Vilan.

This trend was consecrated in the summer of 2007 when the prestigious Canadian Centre for Architecture (CCA) in Montreal chose urban agriculture as the theme for the annual Power Corporation awards to Master-level architecture students for summer research.[10] Other universities where a focus on urban food or agriculture issues was adopted within a studio setting since 2007 include University College London (instructor: Sara Feys), the University at Buffalo (Linda Schneekloth), the University of Sidney (Rafael Pizzaro)[11] and the University of Toronto (Adrian Blackwell).[12]

This paper will focus only on the involvement of Ryerson's Department of Architectural Science, spanning from first-year to thesis projects. The student work included here appears to fit fully within the pattern of themes and approaches found in these other places of architectural education; as elsewhere, the Ryerson examples are integrating food production and security issues into affordable housing, landscape and urban design, among other customary concerns.

RYERSON UNIVERSITY AS A CASE STUDY

Beginning in the fall of 2006, a group of fourth-year Ryerson University architecture students, faculty and outside advisors formed to work on food issues that were embodied in the student thesis projects. In this group, the researchers shared their strategies and discussed problems and issues regarding food-related architecture and urban design. Concurrently, students in earlier years, notably first- and third-year architectural design students, were assigned shorter projects that involved local food production through the design of allotment garden plots and greenhouses. In the 2007/08 academic year, this working group continues, with the previous year's thesis students taking time from practice to consult, along with the faculty advisors, with new students interested in food issues.

a- 1st Year

The initial project for first-year studio in Ryerson's architectural science program has, for some years now, included observation and research (both primary and secondary) about an urban sector of

[5] Another pair of publications that can be cited in this regard are special issues of Architectural Design edited by Karen Franck (Architectural Design 2002 and 2005). See also Horwitz and Singley 2004; and Haag 2008.

[6] For information on the Short Continuous Picnic, run at the University of Brighton's School of Architecture and Design, see http://www.bton.ac.uk/art/news/picnic.html.

[7] Brandon Prinzing ran this design studio with colleagues. See http://worcesterstreetgarden.org/ news/index.htm

[8] For more information on the Detroit Studio, run at the Lawrence Technological University, see http://www.ltu.edu/architecture_and_design/architecture/detroit_studio.asp

[9] For more information on the course entitled: Designing Sustainable Urban Food Systems, run at Eugene Lang College, see http://www.newschool.edu/lang/courses.aspx?id=8774

[10] For the final report on this Collaborative Research Topic, see http://www.cca.qc.ca/documents/PowerCorp_final_2007.pdf

[11] An article on "White Bay Eco-City", part of a course at the University of Sidney, is reported in: http://www.abc.net.au/news/newsitems/200706/s1944303.htm

[12] A presentation based on a studio by Adrian Blackwell at the University of Toronto can be found at http://www.ryerson.ca/foodsecurity/projects/urbandesign/Adrian%20Blackwell.pdf.

Toronto. This becomes background for a small design project. One first-year studio was brought to a demolition site at the edge of Regent Park, one of the largest 1950s to mid-60s social housing projects in North America (Rose 1958). The demolition was just the start of the neighborhood's complete redevelopment,[13] meaning that the students were able to engage with a real project in their very first design exploration.

What the students observed in the course of their research and analysis was that much of Regent Park's open space is currently devoted to parking. However, they also noted that despite the conversion of the original open space to parking lots, and in addition to the remaining recreational areas, many residents have gardens devoted partly or fully to food production. The allotment gardens within and near the complex enabled people to have fresh foods, including vegetables that are not typically found in Toronto (Wakefield, Yeudall, Taron, Reynolds 2007; Komisar 2008). Through these findings, students became quite engaged in the possibilities of community building through gardening as well as access to foods that enhanced connections to cultural roots, particularly for the many new Canadian families who live there. The students also noted that the plans for the new, revitalized Regent Park did not, at that time, indicate space for any allotment gardens.

After presenting these findings, students were then challenged to respond as designers. As first-year students, presentation and design skills were rudimentary, but the ideas were quite compelling. One student proposed two large greenhouses that served as a monumental gateway as well as a location for year-round productive gardening. Another student combined a water feature with edible landscaping. A third proposed to use allotment plots as an ornamental edible border between the street and the new open space created for Regent Park. Without knowing about the movement calling for 'edible landscapes', which proposes such solutions, her design is precisely what those espousing this approach are looking to achieve.

b- 2nd Year

In early 2006, second-year students[14] took the initiative to put in place the first of the food-focused activities outlined here. They chose to run a design charrette for a permanent farmers' market in Dufferin Grove, a Toronto park that had a well-established market in it already, using improvised facilities. Programmatic requirements called for accommodating an existing skating rink facility with the new farmers' market structure.

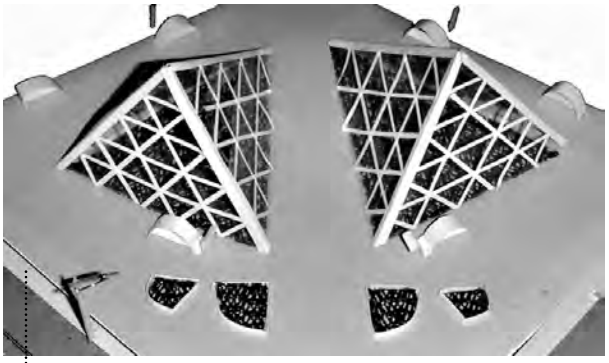

Figure 1. One of the 1st-year projects, by Jennifer Yan By kind permission of Jennifer Yan

Projects were judged on the quality of community design, technical design and an economy of means. The solutions reused building materials and creatively adapted standard off-the-shelf elements such as garage doors, which opened up the building for an outdoor market during the warm season. Using such elements, they were able to propose adaptations to the existing structure on the site. Some of the students involved pursued a food focus in their subsequent studies.

c- 3rd Year

In 2007, the third-year architecture students were assigned a design project that was called "Making Dinner."[15] Covering the whole process from food to table, students were asked to create a cooperative dining and greenhouse facility for a unique neighborhood on the Toronto Islands. Living in a car-free cluster of houses on an island in Lake Ontario only 15 minutes by ferry from downtown, residents have to go to the mainland for food. The project was to have minimal impact on the fragile land as well as create a productive greenhouse and a pleasant communal space to cook in and enjoy communal meals.

To start, students were asked to design, prepare and serve a cultural meal for a community of their choice. This made them think about the expe-

[13] Regent park, for the current plans, see http://www.regentpark-plan.ca/planningapprovals.htm.

[14] The two students who organized this charrette were Micah Vernon and Sana Sanamian.

[15] The professors who were involved with this project are Colin Ripley, Mark Gorgolewski, Ian MacBurnie, and Yew-Thong Leong. Mark Gorgolewski presented this work at the "Food for Talk" session.

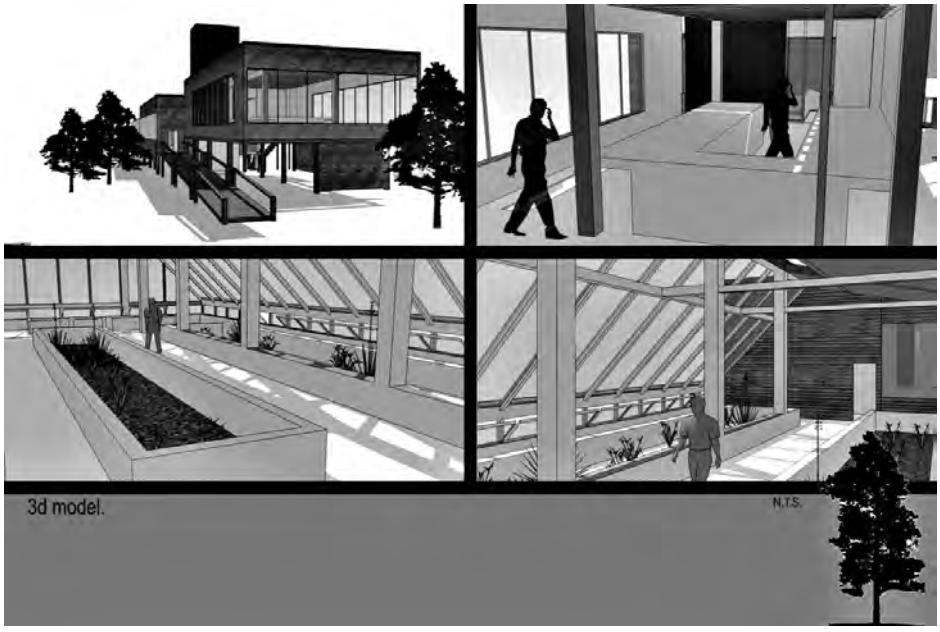

Figure 2. One of the 3rd-year projects, "Making Dinner" by Megan Cameron By kind permission of Megan Cameron

rience of both food production and consumption. Their work addressed not only community, but also local food production as a way to reduce energy consumption in general, and to increase access to fresh, healthy produce. Students were expected to consider how to create optimal conditions in the growing spaces, and how these should be related to preparation and consumption spaces. The engagement with food production, the implications for sustainable food-procurement practices, food security, and the creation of a sense of community were key learning outcomes of the project.

d- 4th Year

In recent years, growing numbers of Ryerson students have been exploring issues of sustainability in their fourth-year undergraduate thesis projects. In 2006, the areas of interest widened significantly, and several developed a curiosity about issues of food and its relevance to sustainability and architecture, deciding to pursue their thesis investigations in this area. Eventually, and largely initiated by the students and facilitated by June Komisar and Joe Nasr, a special interest group was formed which grew to seven students, interested faculty, and a number of architects and urban planners who had been working with food issues including urban agriculture and food - locally and internationally.[16] In parallel to the regular studio critiques from their thesis coordinator, the students met throughout the year with this informal group to share case studies, discuss how their designs would best serve the community - including how to meet the needs of food production, distribution and education and issues such as access to food - and growing strategies in small urban spaces. The explorations include a number of innovative ideas for land use and community development, including an urban farm, a slow-food cooking school, a greenhouse and market complex under an elevated highway, and productive spaces within a cooperative housing.

Several projects examined the potential for food production in undervalued or waste spaces in the city. The Gardiner Expressway, a highway overpass that slices through Toronto separating the city from Lake Ontario, provides the location for Andy Guiry's project, which investigates the possibility of situating productive greenhouse spaces below a raised highway, utilizing the side facing south to capture sunlight and the heavyweight structure of the highway for thermal mass to store the captured heat, and use tiny turbines to capture the wind energy from cars zooming along the expressway. Raised highways are often condemned as urban blights that lead to localized social and economic poverty. This project explores the potential of the highway as a community asset by generating functional and symbolic relationships between the highway and

[16] Wendy Lopes, Diana Lee-Smith, and Mark Gorgolewski were among the guest teachers and professionals in these sessions. Many are associates in the Ryerson Centre for Studies in Food Security - see http://www.ryerson.ca/foodsecurity/.

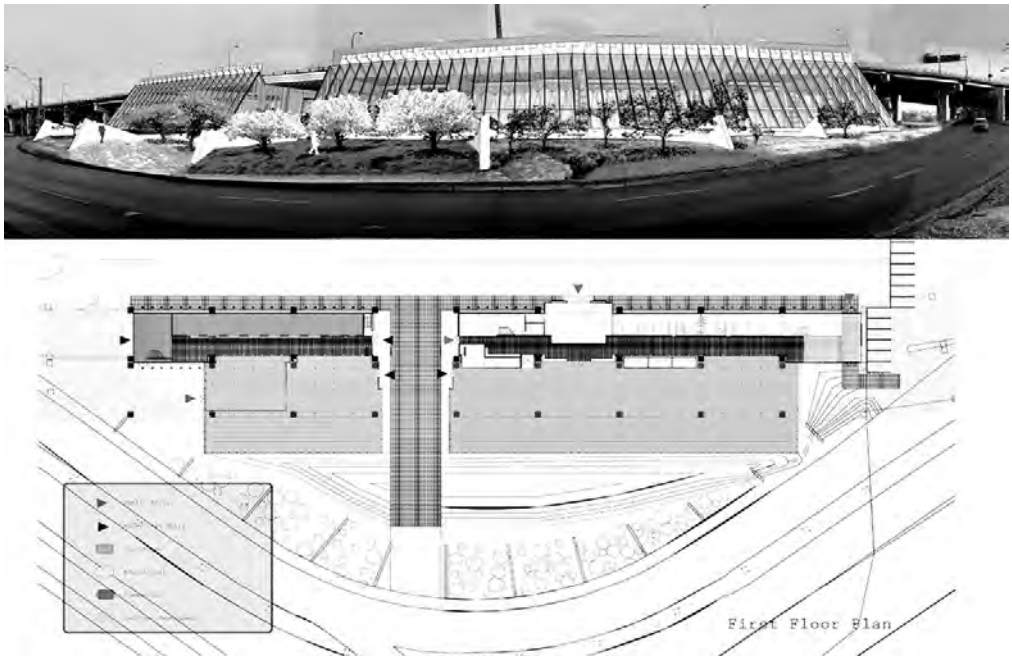

Figure 3. Thesis project of Andrew Guiry: "Urban Agriculture Hub" By kind permission of Andrew Guiry

the surrounding landscapes. The aim is to knit social, economic and ecological processes together with essential urban infrastructure to design new ways of generating potential for wasted urban space around the production of food. Ecological processes such as the flooding of the Don River at the east of the site, and seasonal solar and temperature variations are incorporated into the functionality of the greenhouses, building, and productive landscape. The project includes the integration of educational facilities and a commercial space that sells garden supplies in addition to food and plants produced in the large greenhouse. Materials proposed for the building and the garden were to be reused components from nearby wherever possible.

A second project, looking at underused land and waste material reuse, concentrates on how community development can be focused on food issues. Jordan Edmonds' community food center for the Niagara neighborhood in Toronto not only acts as a transitional bridge between housing and park space but also features reuse of existing structures and includes a farmers' market, gathering

Figure 4. Thesis project of Jordan Edmonds: "Urban Barn" By kind permission of Jordan Edmonds

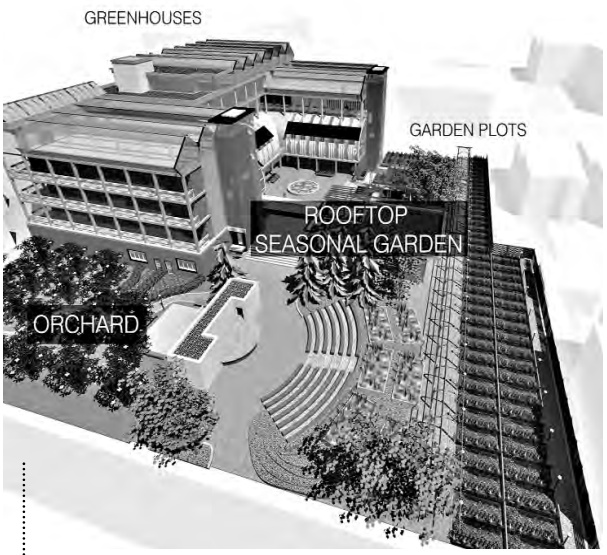

Figure 5. Thesis project of Nicholas Seed: "Unzone Community Epicentre" urban co-housing. By kind permission of Nicholas Seed

spaces, bicycle paths, greenhouse structures, and a community garden. His design is anchored in the history of the site, which was once a neighborhood of icehouses and slaughterhouses and had a river running by (now buried). Using this history as a way to infuse the project with meaning serves to connect this area with its past at the same time that it bridges between parkland and housing. The project is presented as a prototype for future urban landscapes that use food-related activities to create a sense of community.

Nicholas Seed's "Unzone" project was envisioned to serve as both a neighborhood center and as cooperative housing, combining adaptive reuse and new construction. The project site was a former office building in a residential area between the University of Toronto and the central business district. The project proposes the integration of cooperative housing, commercial, retail and community growing spaces. The proposed outdoor farmers' market, an indoor market, garden plots, an orchard, mushroom growing in the basement, and rooftop green-roof gardens and greenhouses for multi-season food production serve the larger population.

Some of the projects were designed to be pedagogical tools, connecting urban Toronto dwellers with the food they eat, and providing educational opportunities for the community. One proposal, by Winnie Lam, incorporates a slow-food cooking school, dormitory and restaurant with productive green roofs and edible landscaping. As the design developed, the whole food cycle was made part of the educational experience. New chefs would learn about growing fresh herbs and seasonal vegetables as well as how to recycle. Food waste would be used as compost for the gardens, which provided salad greens, herbs, and seasonal fruit. Thus, her design followed food from seed to table.

Another project, by Victoria Dimitrieva, proposes a teaching and productive greenhouse that also serves as community space, strategically located at the end of a linear green space in a residential neighborhood near downtown Toronto. The long southern exposure of the lot was ideal for providing space for garden plots across from the proposed building. The south side efficiently uses both vertical and horizontal growing surfaces, with cylindrical growing surfaces wrapped around structural columns as well as living walls. The north side contains community rooms and offices. Energy for water distribution and filtration for the growing surfaces is provided through the use of solar panels.

A highly conceptual project, by Brad Augustine, was designed to teach about the impact of food production on the environment. This proposal - a high-rise farm culminating in a penthouse restaurant - sought to demonstrate the resources needed to grow all the food consumed in the restaurant at the top of the tower. The purpose of internalizing the growth and production of livestock and produce was to examine the theoretical food plane required to support our consuming needs. Results can then be drawn: feeding cattle to produce beef, for example, takes ten times the space needed to produce the average vegetable. Restaurant patrons would travel in a glazed elevator through the floors of food production (cows, chickens, grain, vegetables, fruit trees, etc.) up to a restaurant where herbs are grown and the cooking is completely visible. This would provide an experience that was immediate, close, and informative on a very basic level, about the effort and resources involved in food production.

These projects (along with additional ones by students who did not participate in this informal group, such as Rachel Winkler's proposal for an "urban kibbutz") illustrate the serious and diverse nature of responses to food supply issues in the city and the potential impact of these issues on the design of the city and its buildings. In the following year, a new group of students took up the challenge, working on a new set of related issues.

Figure 6. Thesis project of Victoria Dimitrieva: "Centre for the Urban Gardener" By kind permission of Victoria Dimitrieva

e- Other Ryerson activities

Since the "Food for Talk" session in April 2007, the number of food-related activities at Ryerson University's Department of Architectural Science has mushroomed. The pedagogical work has continued and expanded. Projects were developed with local partners, including a charrette with the City of Toronto in Winter 2008 to develop proposals for a local urban food production and education center (Black Creek Farm), and a project in the same semester as part of a class on "Small Buildings" to seek ideas for support structures for food production in a new federal park (Parc Downsview Park). International initiatives have also being launched, including a studio/seminar course in Brazil in Spring 2008 that combined issues of food security with challenges of design in a historic context and in water-deficient urban settings; this course included collaboration with students from the Catholic University of Belo Horizonte and the University of Michigan. Upcoming integration of food themes is expected to continue in the coming academic year. The climax for this pedagogical trend is the approval of an entire course devoted to "Food and the City", to be offered in Winter 2009.

Various presentations on such themes have been and will be made at conferences and other meetings.[17] These initiatives culminated in a symposium that the Department hosted in May 2008 to explore the role of food and agriculture in the design and planning of buildings and cities. Envisioned initially as a small workshop, this evolved into a larger meeting featuring over two dozen speakers and nearly 150 participants, based on the strong interest that materialized.[18] A series of exhibitions in locations in Canada (the Design Exchange in Toronto, the CCA in Montreal) and the UK (the London Festival for Architecture), which will feature work by students and practitioners.

ANALYSIS OF PEDAGOGICAL EXPERIENCE

The attention to food issues in Ryerson's Department of Architectural Science grew out of a number of interests, combining in particular the increasing integration of sustainability and community development into the curriculum, twinning the rise in environmental and social awareness among many students. The variety of ways in which these students have been embracing food and agriculture as architecture and urban design issues has been remarkable. Some students are incorporating allotment gardens as gateways to a neighborhood or linkages to a park. Others are connecting various strands of the food system, combining greenhouse structures, cooking schools, and market buildings. Most do not work on food questions in isolation - rather, they are bringing together food

[17] At this writing, these have included: conferences of the International Seminar on Urban Form (in Ouro Preto, Brazil), the Association of Collegiate Schools of Architecture (in Cambridge, Ontario), and the International Planning History Society (in Chicago); and at the "Pollinating our Future" Urban Agriculture Conference (in Milwaukee) and the Growing Food for London Conference. Moreover, invited lectures have been made at the University of Central England (now Birmingham City University) and Cardiff University.

[18] The program and most of the presentations are posted at: http://architecturefood.googlepages.com.

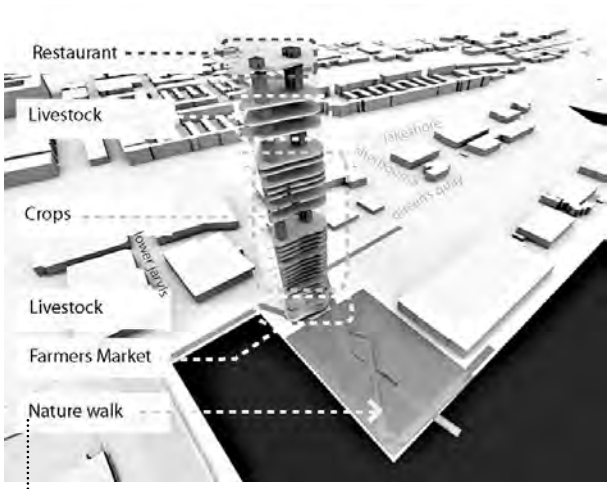

Figure 7. Thesis project of Brad Augustine: "[Verte] scape: a consumer's dilemma" By kind permission of Brad Augustine

matters with housing, waste management, education and other basic urban spatial demands. Aims include enhancing the landscape, creating a sense of community, increasing access to fresh produce, and designing in an environmentally responsible way.

By reviewing each other's projects and exchanging ideas with their counterparts and from guest experts, the thesis students developed their common interests and shared knowledge on interfaces with the community, appropriate uses of waste urban land, and suitable urban growing locations and environments. They also considered appropriate site strategies, technical considerations and sustainable design initiatives such as appropriate materials, green roof design, energy efficiency, rain and greywater capture for use in cultivation, remediation of contaminated land, and more.

These meetings gave students courage to challenge the norms on questions such as project location, zoning and traditional living arrangements. As a result of those exchanges, these thesis projects were robust, well thought out, and forward thinking, breaking new ground. The outcomes reflected this: the 2006-2007 4th-year projects were among the best ones that year, with two of the students (Edmonds and Guiry) sharing the award for best thesis.

Using food issues as a point of departure proved to be excellent for addressing a range of design challenges including social inclusion, cultural context, community design and sustainable building practices. The Ryerson architecture students, not only responded to, but also led initiatives that embrace a reconnection between production and consumption of both food and energy. The fact that students themselves pushed the integration of urban food issues in most of the cases shown here is indicative of a direction in which the architectural profession appears to be heading. Inviting professionals from the field into the research and design process and discussing innovative case studies with them enlivened the discussion and brought to light strategies and products that could enable the students' visions to become viable. A genuine excitement could be felt, reflecting awareness by these experts that they were encountering a special moment.

The presentation of this student work to expert practitioners and academicians working on Toronto's food production and supply challenges through the above-mentioned "Food for Talk" forum brought the discussion to an audience that had not seen architecture as part of the solution to the food security and urban agriculture agendas. Clearly, this interaction has engaged and enriched the work of these young designers and brought a new range of possible solutions to the food professionals, adding built form to their toolbox. It is through such exchanges between professions that innovative solutions can be forged. Contact with the "real world" both enriches the student experience and provides a fresh look at problems for those charged with solving them.

CONCLUSION

The education of architects, planners and other professionals who impact the design of cities has long failed to address the implications of food supply on city design. As we begin to grapple with the issues of building a more sustainable way of living, food security is becoming a central concern, and students are expecting to be given an opportunity to consider these issues as part of their studies. A greater sophistication in the understanding of the meaning of sustainability and the scale of impacts that issues such as climate change and peak oil will have on the provision of food are beginning to demand attention. Questions about net-zero-impact food supply chains for urban residents are directly relevant to the way we design and plan our built environment, and therefore how we educate the designers of the future. But at the same time, using the creative ideas of these young minds provides an insight into innovative solutions that may help point the way to how we can address food

security in the city in a future of high-energy costs and increased planetary temperatures.

Reconnecting cities to their food systems is now emerging as one of the core components of the design of more sustainable urban settlements. At the same time, in the name of sustainability, we are increasingly encouraged to adopt higher densities in urban areas to reduce transport and build multifunctional and well-integrated communities. But what are the implications of urban food production for the design of buildings and cities? What types of buildings, urban spaces and cities can we expect as local food supply becomes more of a concern? What are the implications of these shifts for architects, planners, urban designers, landscape architects, interior designers and the other professions that create the built environment? Research studios in architecture schools allow these issues to be investigated through applied practical consideration of design problems. The link between the design and planning of the built environment and its food system is an emerging area of study, reflecting a new awareness of the importance of the food and agriculture sectors in the functioning of cities and communities. The early initiatives at Ryerson University described above illustrate the emerging potential to use these pedagogical activities to act as a research tool for investigating what such questions imply.

The architecture students who have been exploring these questions are trying to find answers to some of the problems many of our cities are facing now, and will increasingly face, regarding access to food and its relation to sustainable design. These students have demonstrated that architecture can play an important role among the range of professions seeking to enhance the supply of food to the ever-increasing population of our cities.

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