GLIDE12: CONSUMED

INTRODUCTION: A WICKED SOLUTION TO THE GLOBAL FOOD PROBLEM

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ABSTRACT

Key Words: memetic design, design meme, food, localization, wicked solution, creative problem solving, wicked problem, communication design

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FULL PAPER

Welcome to the Special Issue "Global Interaction in Design (GLIDE) 2012: Consumed"

Whereas my previous work (Bennett, 2006) purports the rise of research in communication design, my recent review of the field (Bennett and Vulpinari, 2011) shows how communication design has fully evolved into a research discipline that contributes new knowledge to interdisciplinary knowledge, both within and outside design. Communication design educators who opt to do research for their scholarship are integrating qualitative and quantitative research methodologies into their creative problem solving process – defined here as the conceptualization of innovative solutions that take form in either new or existing communication design conventions. These researchers are investigating the varied roles communication design expertise can play in contributing understanding of what we might call a "global visual ecosystem": the increasingly dynamic play of static and dynamic images as they communicate across social, political, and economic boundaries. This special issue examines how communication design research presented at GLIDE'12 on November 7, 2012 can offer a positive impact on the complex global food problem – by meeting its complexity with an equally complex system of solutions that facilitate interaction with visual messages both cross-culturally and across research disciplines.

Why I did it

As communication design scholars conduct research, they are in need of venues to disseminate their findings and share outcomes; and, research-based conferences provide one way to meet that need. One such conference is a biennial, virtual conference that I founded in 2007 called Global Interaction in Design Education (GLIDE). GLIDE's virtual-only format aims to bridge cultural and geographic divides in an eco-friendly way. Each GLIDE conference has a different theme, one that stems from technologically-mediated discussions between myself and design consultants from around the world concerning the current state of communication design and its role in mediating global interaction around social issues.

During consultations with communication design educators Adream Blair (United States), Dr. Gloria Gomez (Denmark), Muthoni Kimani (South Africa), and Michele Washington (United States) in 2011, I decided that GLIDE'12 would focus on food, nutrition, and health. Titled "Consumed" the most recent GLIDE conference promoted research and critical thinking on international issues surrounding the global food problem and its impact on nutrition and health.

"Today, food is no longer viewed simply for nourishment, pleasure, or an overly mass-produced product. Now, due to global industrialization, the way humans interact with food systems and production has reached a critical mass, requiring citizens of the world to consider the introduction of new methods and technological systems that will enable global cultures to remain healthy and viable in the foreseeable and unforeseeable future" (Michele Washington, December 2011, personal communication).

The Global Food Problem

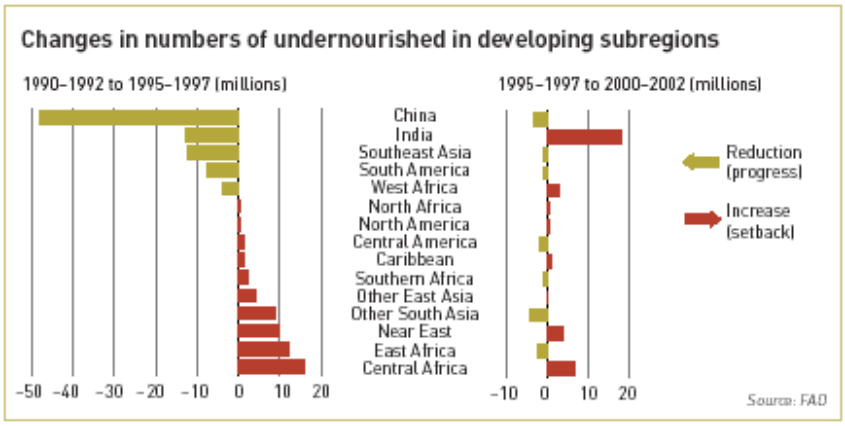
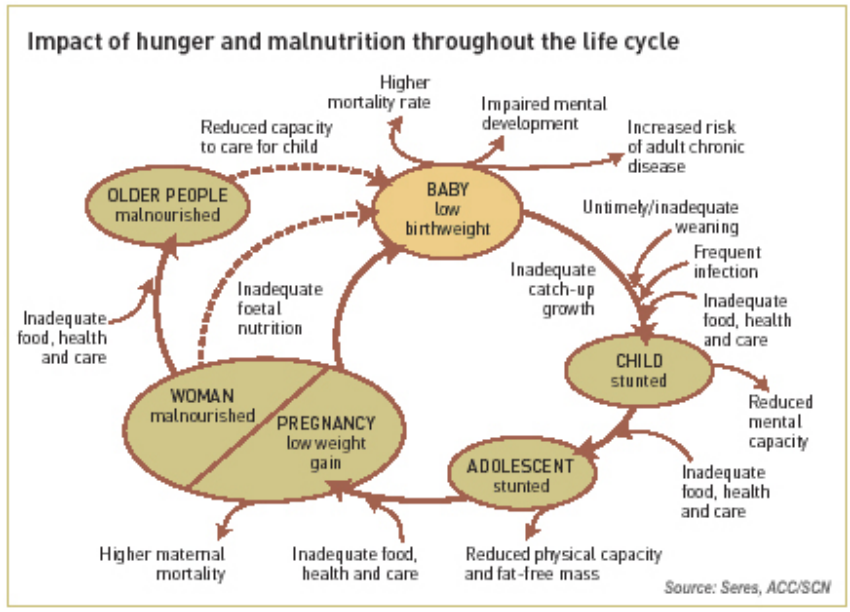
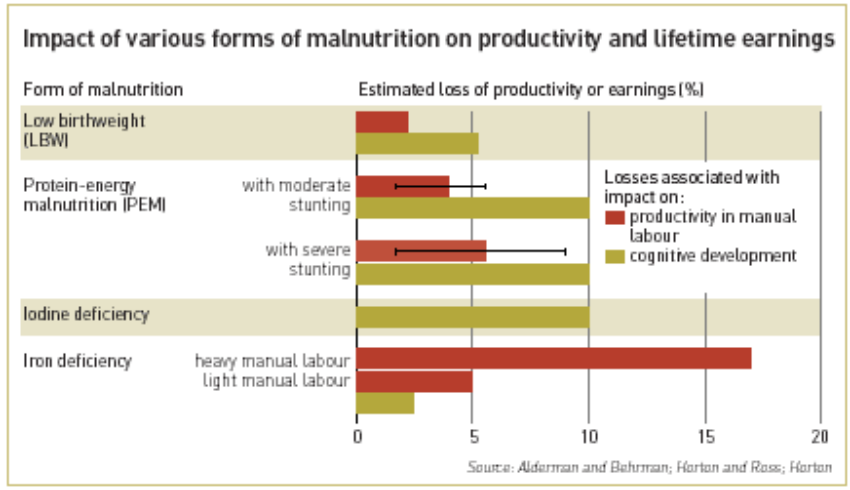


Figure 1 Changes in numbers of undernourished in developing subregions, © FAO 2004

While some parts of the world have made progress in reducing undernourishment, most of the world has seen a setback over the past few decades (See Figure 1), even in economically developed nations. According to the United States Department of Agriculture, in 2008, 14.6% of U.S. households struggled to put enough food on the table; and, more than 49 million Americans – including 16.7 million children – live in these households (2009). Acute lack of access to food can cause wasting, a severe form of malnutrition, from which the World Health Organization (WHO) estimates 20 million children suffer and 1 million children die annually – primarily in South Asia and Sub-Saharan Africa (2007); and Figure 2 shows alarming consequences for the individual and consequently society at large.

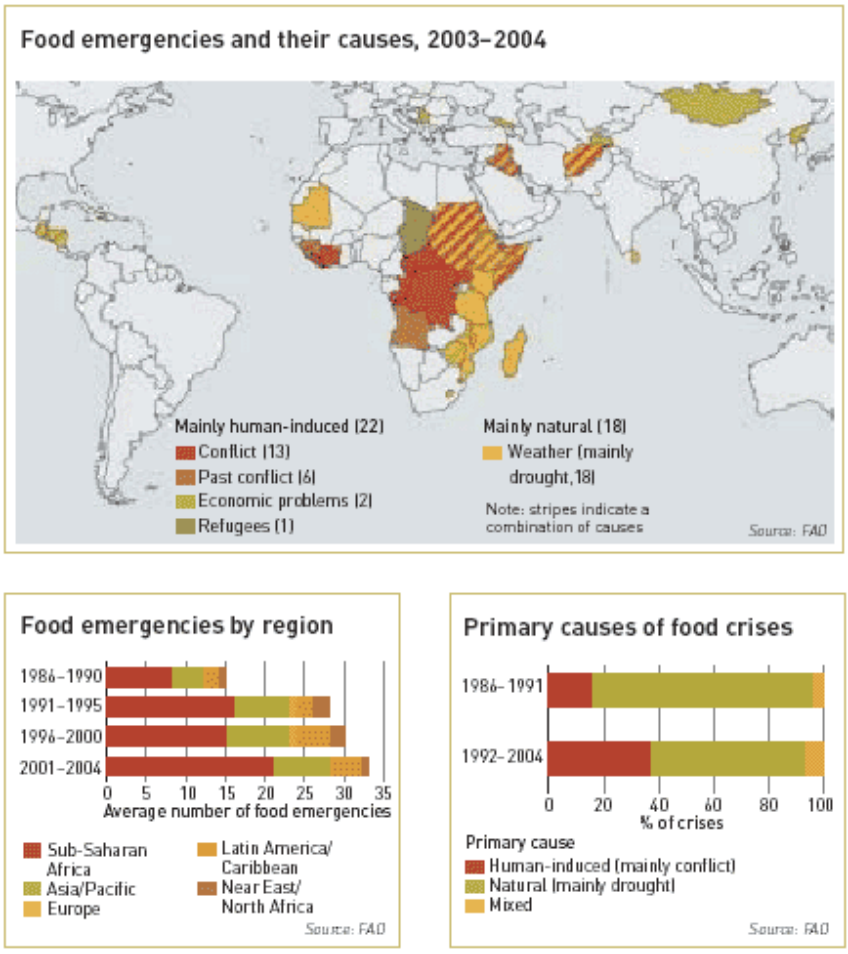
Figure 2 Impact of hunger and malnutrition © FAO 2004





Regarding the global food problem, Foster (1992) and subsequently Leathers and Foster (2009) focus their attention on under-nutrition in the third world. However, the problem with global food today has another side: excess consumption – in particular the high calorie, low nutrition junk food made increasingly accessible – because it leads to obesity and related health problems. As the United States Department of Health and Human Services notes, obesity is linked to a multitude of health problems including diabetes, cancer, and heart disease (2013); and, according to WHO, there are more than 1 billion overweight adults globally and at least 300 million of them are obese (2003). The global food problem now includes both over-consumption among the wealthy, as well as lack of access to good nutrition among the poor.

Figure 3 The global food problem and its causes, © FAO 2004



A common myth about hunger is that it is a sort of unstoppable natural disaster: empty shelves due to third world droughts or floods. In reality though, as Figure 3 shows, the proportion of food crises that are linked to human causes such as warfare have more than doubled since 1992 (The Food and Agriculture Organization of the United Nations, 2004). In some cases there are full shelves and not enough money. Then, there is the replacement of small-scale farmers by large-scale agribusiness that has resulted in more food shipped globally, but less access locally, as high nutrition plants for local consumption are replaced with export cash crops. As a result, people living in regions with abundant commercial food production may still experience hunger, malnutrition, or related health issues.

There are people whose high level of access has also allowed an unhealthy diet. Food producers investing in the growing technological, and economic resources that enable heightened levels of global food development, production, and management also invest in what we might call 'technologies of malnutrition' – the fast food restaurant, the slick advertising campaign for sugary cereals that targets children, 'convenience foods', soda vending machines and the like. As a result, people living in regions where there is excess food grapple with choice of quantity and quality in the food that they consume. Poor choices like too much high-fat and over-processed food choices can lead to a plethora

of health issues including eating disorders. For instance, Lee, et al. (2002) found that in wealthy communities or rapidly developing ones, particularly high-income Asian societies, with excess food resources, reports are on the rise for anorexia nervosa and bulimia. Solving the problem of global food requires an understanding of its complex causes and consequences that vary by culture and geographic region.

A Wicked Solution: A Theory of Communication Design

The global food problem epitomizes a "wicked problem" (Buchanan, 1992; Rowe, 1991; Rittel & Weber, 1973; Churchman, 1967) that is ill-defined because it exists within an evolving and complex system of smaller, context-specific problems. For instance, understanding how food production leads to a diabetic adult in a developed region of the world would involve the analysis of many different contributing factors including: government subsidies to the sugar industry; advertising schemes that link junk foods with athletics or meat consumption with manhood; the collusion of political and business forces that made fast-food outlets more common than grocery stores, and so on. A wicked problem like the global food problem is also hard to solve because one solution may disrupt the system, lead to other problems, or only address a small part of the whole problem. For instance, helping adults to avoid diabetes by eating well might be aided by a top-down policy like New York's recent attempt to ban oversized, sugar-sweetened drinks. However, the political backlash for such a nanny-state approach can backfire, winning political power for movements that dispute the validity of the very health problems it seeks to address. Due to the emergent properties of wicked problems, bottom-up approaches may stand a better chance. For example, a study by researchers at the University of Leeds recently showed that overweight dieters using a free smartphone app averaged 3 times the weight loss of those using a paper diary (Carter, 2013). Better communication design really does matter.

Yet we cannot lose sight of the real complexity at stake: a wicked problem like the global food problem, I posit, cannot be solved with one simple approach. That is to say: a wicked problem requires a wicked solution that is a synergy of top-down and bottom-up, memetic and localized approaches. Figure 4 illustrates how design outcomes can be conceptualized as evolving across a field of possibilities mapped by two sets of dimensions.

Along the vertical I map top-down versus bottom up approaches. A bottom-up design solution starts with the agency of lay people; whereas as a top-down design solution stems from a position of power within a governing hierarchy--like the local, state, or federal government--that implements a policy to bring about change. Along the horizontal I map the opposing poles of localized versus memetic or viral propogation. Building on evolutionary biologist Richard Dawkin's theory of memes as ideas that function like genes and permeate culture through replication (1976:192), a memetic design solution, or a design meme, is one that replicates – often cross-culturally – to many populations and locations. In contrast, a localized design solution is a singular to limited production of an outcome for a smaller audience. Cyr and Trevor-Smith (2004) define localization as customization of aesthetic features; alternatively Almeida

and Kolgut (1997) define it in terms of geographic context. Here, I define localization as a 'short-run' production for a small group of people that incorporates both of these features while emphasizing its contrast with the self-propagating nature of memetic designs.

A WICKED SOLUTION

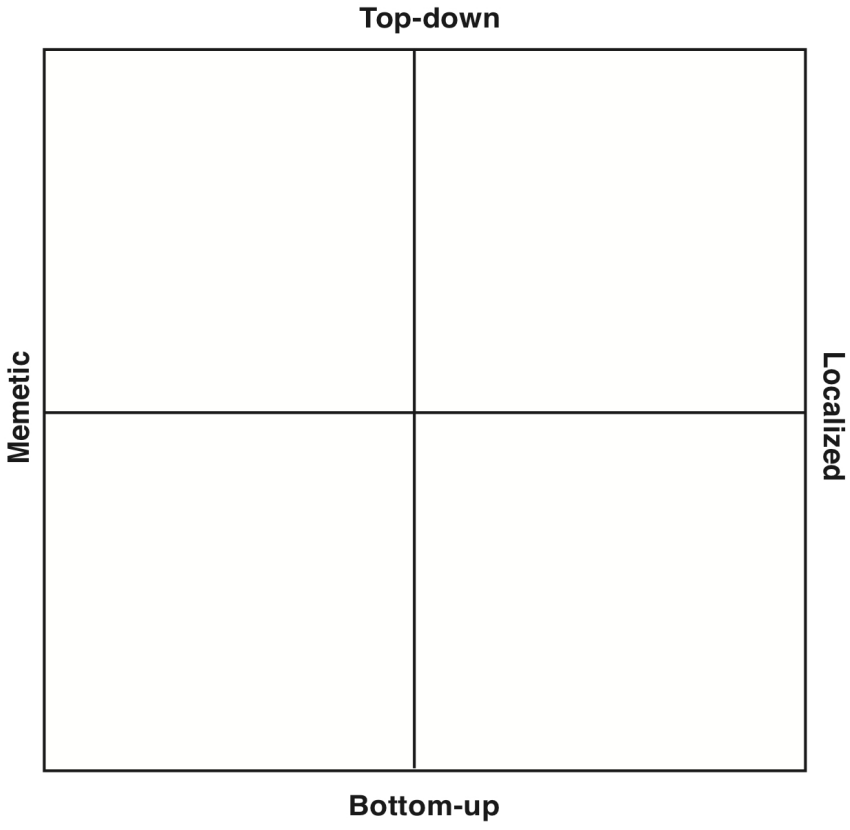


Figure 4 A wicked solution to a wicked problem derives from a creative problem solving process and has multiple forms or sub-solutions that are a synergy of top-down, bottom-up, memetic, and localized approaches.

Communication designers who submitted proposals to the GLIDE'12/ Iridescent Call for Proposals (CFP) helped us to see how a wicked solution to the global food problem needs to include the entire range of this space of design possibilities.

What came out of it

In order to attract communication design and food research taking place in both industry and academia, I kept the same acronym GLIDE but renamed the conference 'Global Interaction in Design' (from 'Global Interaction in Design Education'). As our CFP states, we welcomed submissions from:

> "...researchers [(i.e.] research practitioners, educators and doctoral students from all disciplines[)] that study communication design or integrate a communication design perspective in their collaborative research or projects on the global state of food production and consumption and its impact on nutrition and health... [including projects that address questions of]: 1) the role of communication

> design in addressing the issues of hunger and nutrition or the pursuit of good health; 2) the role of communication design in effecting good health or engendering healthy nutritional habits for disease prevention or management; 3) collaborative research and practices between communication designers and other stakeholders on the creation of more eco-friendly and sustainable food systems and public policy regarding food displacement; 4) the visual or design culture of food or health systems globally; and 5) the effectiveness of social media to manage food consumption, nutrition, or health..." (GLIDE12)

We received twenty-six abstract proposals to the CFP; and, after a multi-round, peer review process, we accepted three full papers (published in this special issue) alongside three poster paper presentations published separately in the GLIDE'12 proceedings (Baohouse). The poster papers disseminated research in early stages of exploration and experimentation; whereas, the full papers presented completed research or a completed step in a longer research methodology. The following three papers published in this special issue contribute varying research-informed perspectives on how communication design can contribute to a wicked solution to the wicked problem of global food:

1. In "Rethinking Food Recall Communications for Consumers," which won the Best Paper Award at GLIDE'12, Clinton Carlson and Whitney Peake describe how they used a qualitative, user-centered research approach to understand consumer preferences for notification of recall information.

2. In "Designing Food Cultures: Propagating the Consumption of Seaweed in the Azores Islands through Recipes" Sonia Matos presents an ethnographic study to propagate the food ritual of foraging seaweed locally in the Azores Islands through locally-produced recipes derived in collaboration with lay people and potentially across cultures globally through the future design of a cookbook.

3. In "Mapping Edible Aroids," Karin Vaneker and Erwin Slaats posit that mapping can be appropriated to effect global cognizance of the health benefits and geographic locations of edible aroids.

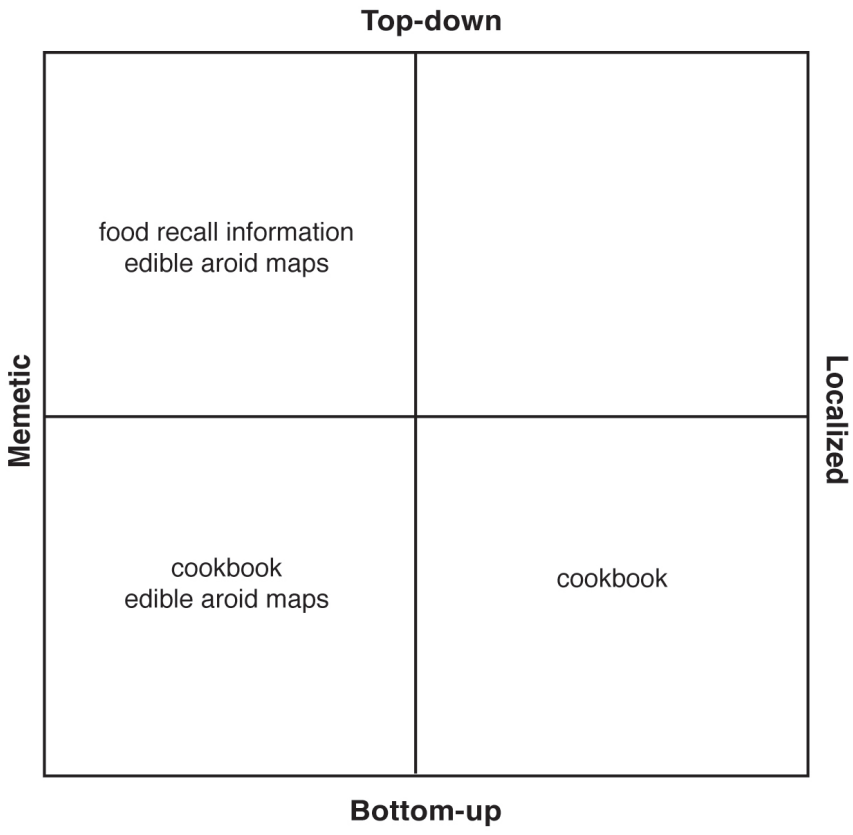


Figure 5 A wicked solution to the wicked problem of global food shows a synergy of top-down, bottom-up, memetic, and localized approaches: Carlson and Peake's food recall information notification (top-down, memetic); Matos' cookbook of recipes (bottom-up, localized and potentially memetic); and Vaneker and Slaats' edible aroid maps (bottom-up and potentially top-down, memetic)

The design outcomes proposed by the authors in this special issue contribute to the wicked solution. As Figure 5 indicates, more solutions are needed in order to realize fully a wicked solution to the wicked global food problem.

Conclusion

As food is a new system of communication (Barthes, 2012), food is now a new medium for creative problem solving by communication designers. This affirms what is suggested by the ICOGRADA Design Education Manifesto 2011 that the disciplinary boundary of communication design is at present permeated with ample opportunities for interaction between different types of professional and lay stakeholders (Bennett and Vulpinari, 2011). On the one hand, professional and lay stakeholders can interact with designers and/or design theories and resources. On the other hand, design experts can move away from the traditional printed or digital page to new communication turf – even the dinner plate.

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Audrey G. Bennett is a tenured associate professor of graphics at Rensselaer in Troy, New York. She has an M.F.A. in graphic design from Yale University's School of Art. She penned the 2012 monograph titled "Engendering Interaction with Images" published by Intellect, UK and distributed in the US by Chicago University Press. She has won numerous awards for her graphic art including a College Art Association Professional Development Fellowship. Prof. Bennett's research is funded by Google, The Coalition to Diversify Computing; The Society for Technical Communication; National Science Foundation; and AIGA, the professional association for design. Prof. Bennett studies cross-cultural and transdisciplinary communication with images that aim to effect social change.

RETHINKING FOOD RECALL COMMUNICATIONS FOR CONSUMERS

CLINTON C. CARLSON AND WHITNEY O. PEAKE

ABSTRACT

In the last six years, there have been calls for change to the United States (US) food recall system. These calls highlight the need for:

1. Change in federal oversight
2. Better use and management of data
3. More effective food recall communication to the US public

This paper presents recent responses to these calls for change, both from the food industry and government. The authors suggest that the majority of reform and change has focused on federal oversight and improved data tracking, while neglecting to explore ways of communicating food recalls more effectively to the public.

The paper answers the questions:

1. Are there specific ways that the communication of food recalls might be improved?
2. Where and how do consumers prefer to receive food recall information?
3. Who do consumers trust to deliver food recall information?

The extant literature suggests that making information about recalls more accessible to the public might help consumers make more informed decisions during food recalls. The results of two consumer surveys suggest that consumers prefer to receive information at the point of purchase, and that they trust existing federal agencies --the US Department of Agriculture (USDA) and the US Food and Drug Administration (FDA) -- to deliver that information. We suggest that an in-store, point-of-purchase communication system should be explored through different stages of design exploration and testing – allowing for continued consumer input.

Key Words: Food recalls, human-centered, exploratory research, communication design

Citation: Clinton C. Carlson and Whitney O. Peake(2013). Rethinking Food Recall Communications for Consumers, Iridescent: Icograda Journal of Design Research, 3(3).

FULL PAPER

Introduction

This research project explores the US food recall system. It highlights recent changes in the system and posits that communication design is well suited to explore how new technology, industry standardization, and stronger federal oversight could be brought together to redesign food recall communication strategies – potentially creating a safer recall

system, more confident consumers, and reduce waste and illegitimate economic losses during recalls. This paper reviews the background to the current recall system, poses several questions about consumer experiences and desires, reviews current literature and reports results of two surveys designed to uncover directions for further exploration.

Problem Statement

Food safety impacts millions of Americans annually. In 2011, the Centers for Disease Control and Prevention estimated that for the 1 in 6 US residents who become ill from a foodborne disease annually, approximately 128,000 are hospitalized and 3,000 die. According to RASMAS (a recall tracking service), food recalls consistently make up the largest product recall category in the US (2010).

Two government agencies oversee the US food recall system – the USDA and the FDA. Both agencies primarily rely on press releases, online postings, and email recall alerts to notify the public about food recalls (GAO, 2004:9). In addition, both agencies call for companies to issue recalls through their distribution network. Outside of these efforts, food recall efforts rely heavily on the media to communicate with consumers.

Calls for federal reform

In 2004, the US Government Accountability Office (GAO) delivered a report to Congressional requestors, which overviewed food safety issues. The report suggested that the FDA and USDA take steps to address the following weaknesses:

1. Lack of response time for company actions when food is determined to be unsafe
2. Ineffective use of data systems to monitor and manage recalls
3. A verification system that does not ensure the timeliness and completeness of a recall
4. Ineffective consumer notification

The report also suggested that Congress consider legislation that would:

1. Require companies to notify the FDA or USDA of unsafe food
2. Give the USDA and FDA authority to mandate recalls, establish requirements, and levy financial penalties, fines, or imprisonment for failure to follow requirements

Many of the same shortcomings and recommendations are reflected in food industry articles. In 2007 Matthew Enis cites industry and consumer support for a stronger FDA (Supermarket News). In an interview with Chris Waldrop, Director of the Food Policy Institute at the Consumer Federation of America, Waldrop expresses support in giving the FDA the authority to mandate recalls.

Kinsey, et al. (2009) notes that public trust in the FDA and USDA has steadily decreased since the early 2000's. This is a concern as Onyango, et al.'s (2008) review of the 2006 spinach recall indicate a link between the public sense of food security with public confidence and trust in both institutions; and they suggest that there is a need for the FDA and USDA

to build greater consumer trust.

Federal response

In 2009, President Obama created the Food Safety Working Group. Then, in 2011, he signed into law the FDA Food Safety Modernization Act that gives the FDA the ability to mandate and require comprehensive, prevention-based controls for the food industry – including the authority to require a company to recall a product. One of its goals is to hold food producers and processors accountable. The act also initiated reforms to improve tracking of food products, standardize data collection, and initiate a pilot project to evaluate methods within the FDA.

Calls for food industry change

The need for change isn't isolated to government reform. The 2004 GAO report illustrates the need for better industry information sharing by reviewing the 2003 outbreak of mad cow disease. The report describes how the USDA could not efficiently track contaminated beef because of slow responses, imprecise lists, and poor record-keeping practices among producers, distributors, and retailers (GAO, 2004: 40-41).

In 2010, a report generated for the Produce Safety Project at Georgetown University made six specific recommendations for reforming US food safety policy and procedures. These recommendations included improving "the effectiveness of trace-back and trace-forward data for outbreak response" (Batz & Morris, 2010: 9). In a 2003 article Linus Opara discussed the emerging need for "accurate and timely traceability of products" and suggested that the growth in global food sources, an increase in food safety issues, and increasing concern over genetically modified organisms are driving this need (101). The GAO also cited the dispersion of a product and its potential changes in packaging as a factor that complicates recalls (2004).

Industry response

GS1 serves as the non-profit international supply chain standards organization. In 2009, the GS1 worked with the Food Marketing Institute and the Grocery Manufacturers Association to develop a national subscription-based, real-time product recall notification system that efficiently tracks products. The work of this organization allows producers to track their entire supply chain and achieve more efficient recalls, communications, and meet requirements of the FDA Food Modernization Act (2).

Calls for change in communication strategy

The 2004 GAO congressional report highlights the need for improved communication with the public during recalls and for alternative communication methods. Specifically, GAO recommends that grocery stores post notices in their store and communicate directly with consumers through club membership lists. The Produce Safety Project report also highlighted the need for improved transparency and public participation. The report recommended the FDA and the USDA bridge the gap between science and public perception through "education and more explanation" (Batz and Morris, 2010).

A 2010 paper from the Department of Health Policy and Management at Harvard calls for new channels of communication that require minimal consumer effort (Steelfisher, Weldon, Benson, & Blendon). A report from the Food Policy Institute at Rutgers University reinforced this call, showing that almost 40% of Americans say they would be interested in receiving email alerts for food recalls, but only 6% actually utilize the existing service (Hallman, et al., 2009: iii). In addition, Steelfisher, et al. (2010) called for clearer, more actionable information and policies that would assure information gets to ethnically-underrepresented groups. In a review of US recall policies, Patti Waller and Denis Stearns highlight the need for recalls that communicate in the location where recalled products were initially sold (2006). Public interest groups like the Center for Science in the Public Interest and the Consumer Federation of America, support these sentiments, suggesting that recall information should be highly visible in the stores that sell recalled products (GAO, 2004).

Hallman, et al. (2009) found that most US residents believe recall information to be extremely important, but few utilize existing resources to gain specific information to make informed decisions on recalled products. The Center for Science in the Public Interest and the Consumer Federation of America highlight the inadequacy of press releases to deliver specific enough information (as quoted in GAO, 2004, p 24). For instance, during the 2006 spinach recall, there was confusion among consumers, even though the recall received national media coverage. Considering that most recalls receive very little media coverage, this is of concern. The 2006 recall reinforced that US consumers were interested in the recall, but were passive toward obtaining more information (Cuite et al., 2007).

The lack of clarity and/or media coverage when recalls are lifted is also a concern (Cuite et al. 2007). Recalls often include a variety of unrelated products with the same tainted ingredient; or packaging that changes throughout the supply chain (GAO 2004). In a 2008 survey, 55% of respondents were aware of a specific peanut butter recall. Of those, 70% were aware that peanut butter crackers were included in the recall, but fewer than 50% knew that snack bars, cakes, brownies, cookies, and ice creams were also recalled. One fourth mistakenly believed that national brands of peanut butter were included in the recall (Steelfisher, et al., 2012).

Federal and industry changes have focused on oversight and logistics, while visible efforts to improve the way information is delivered to the public have largely gone unaddressed. We posit that communication design can assist in discovering and implementing consumer preferences for the form and content of future food recalls.

This project focuses on improving food recall communication strategies that build on prior research; we expect to provide additional insight on communicating recalls, consumer preferences for information sources, and consumer trust in sources of information. Our questions are:

1. Are there specific ways that the communication of food recalls might be improved?
2. Where do consumers prefer to receive food recall information?
3. Who do consumers trust to deliver food recall information?

Methodology

This paper presents the findings of the scoping stage of the methodology in Figure 1 and provides recommendations for the future stages.

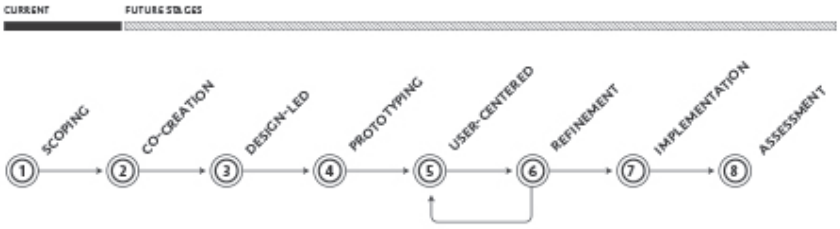


Figure 1 Research Plan (Influenced by Sless, 2008 and Liem and Sanders, 2011)

The scoping stage defines the initial directions and boundaries of the project. In the scoping stage we undertook further literature review, thus identifying opportunities to improve on the current food recall system's communication strategies. We then utilized two consumer surveys to confirm that those opportunities resonated with the public.

Literature Review

Hallman and Cuite (2009) provide guidance for improving food recall communications with consumers. They suggest:

1. Partnering with major retailers may be a next step in rethinking food recall communication to the public
2. Displaying signs at the point of sale and placing recall information on receipts or coupons.

Hallman et al. (2009) report that although most Americans perceive food recalls to be an important issue, pay attention to recalls, and notify others about their parameters, they have very little overall knowledge about food recalls. Additionally, less than two-thirds of the individuals surveyed indicated that they had sought out recalled food in their home. Hallman et al. (2009) also revealed that when faced with several options for obtaining food recall information (on their receipt, in an email, via text message), 73% of consumers indicated they would prefer to receive the information on their receipt.

The recommendations of these articles, along with the apparent desire for a new way of receiving recall information (on the receipt) indicate that the landscape of communicating recalls has changed and deserves to be looked at in greater detail.

Analysis of Data

To further understand potential changes to recall communication strategies and to gauge the public's receptiveness to new ways of communicating food recalls this project deployed two consumer surveys.

An initial survey was designed to give quick feedback about how a key consumer group (millennials) would answer:

1. How would consumers prefer to receive food recall information?
2. From whom would consumers prefer food recall information to come?

A follow-up, slightly modified survey utilized a peer recruitment

technique to recruit a broader age range of respondents through Facebook. This survey incorporated additional questions, which provide further insight into how food recall communications might be improved. It also allowed researchers to confirm results from the initial survey.

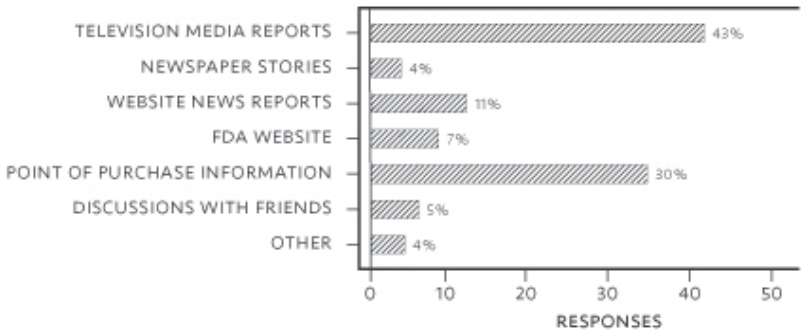
Initial survey

The initial Qualtrics survey consisted of thirty questions. A total of 56 people participated in the survey in April of 2012. The participants were recruited through classes at two university campuses. Participants were offered extra credit in their courses for participating in the survey. To ensure that bias was not introduced, an alternate extra credit assignment was offered for those choosing not to take part in the survey.

Participants

The participants were primarily single (80%), with slightly more than half (56%) indicating they were Caucasian, Non-Hispanic. Half of the participants had an annual income between $17,401 and $70,700; with 66% indicating that they were the primary purchaser of food in their household. Just over half of the participants were male (54%).

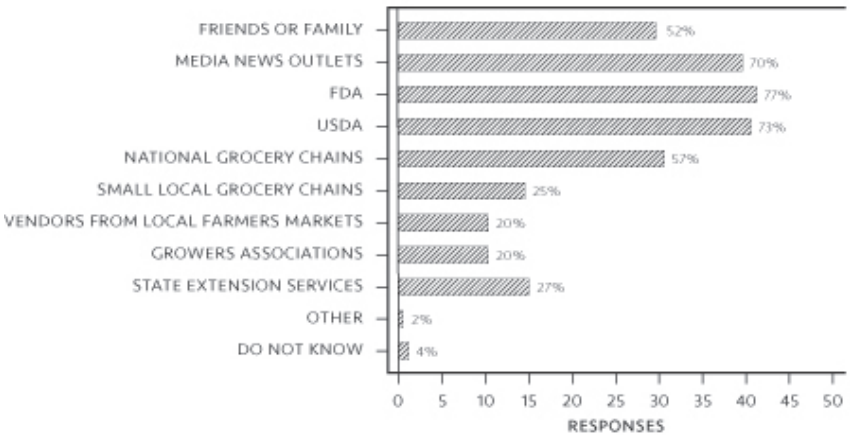
Figure 2 Consumer Preference For Receiving Recall Information



Question 1: Desired means of getting food recall information

We asked respondents: How would you prefer to hear about food recalls? The intent was to compare consumer's preference for receiving recall information in comparison to how consumers currently receive recall information. As Figure 2 shows television reports and point of purchase were nearly three times more likely to be chosen than any of the other options. This supports the hypothesis of Hallman et al. (2008:6) that "communicating about food recalls while consumers are thinking about food may be an effective way to increase public awareness." However, it also raises the question of, if given a choice between various locations in a shopping environment, which would millennials prefer?

Figure 3 Consumer Trust in Various Food Recall Stakeholders



Question 2: Most trustworthy source for food recall information
We asked respondents: Which of the following entities would you trust for information about food recalls? Respondents were asked to check all that applied. The results in Figure 3 revealed that the FDA, USDA, and media/news outlets were slightly more trusted than large grocery chains and friends or family. Though this doesn't provide a definitive answer to the question, it does suggest that if it was apparent that recall information came from the FDA or USDA it might increase consumer confidence. It is also possible that an increase in visibility of the FDA and USDA might also build a higher level of trust in the US food recall system over time.

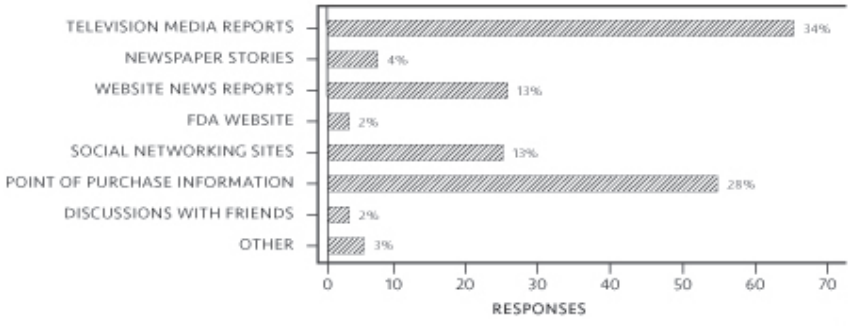
Follow-up Survey
The follow-up Qualtrics survey consisted of 35 questions. A total of 218 people participated in the survey in August and September of 2012. The respondents were recruited through Facebook postings and distributed through existing online networks of friends. They were not offered any incentive to participate.

Participants
Respondents were primarily married (69%), with a majority (81%) indicating they were Caucasian, Non-Hispanic. Approximately 42% of the participants had an annual income between $70,700 and $142,700, with 81% indicating that they were the primary purchaser of food in their household. Nearly three-quarters of the participants were female (74%). In contrast to the initial survey, this group represented a more geographically diverse, older demographic that was less ethnically diverse and had higher annual income. The participants were also primarily female and married.

Question 1: Desired means of getting food recall information
We posed the same question from the initial survey: How would you prefer to hear about food recalls? However, we added social networking sites (e.g. Facebook, Linkedin, etc.) to the options. We also re-worded the previous choice "Point of purchase information (such as at the grocery store)" to read, "In the grocery store where you purchase your food." We felt that this might be clearer to the general public who might not

understand the term "point of purchase". Respondents were directed to select only the one they most preferred.

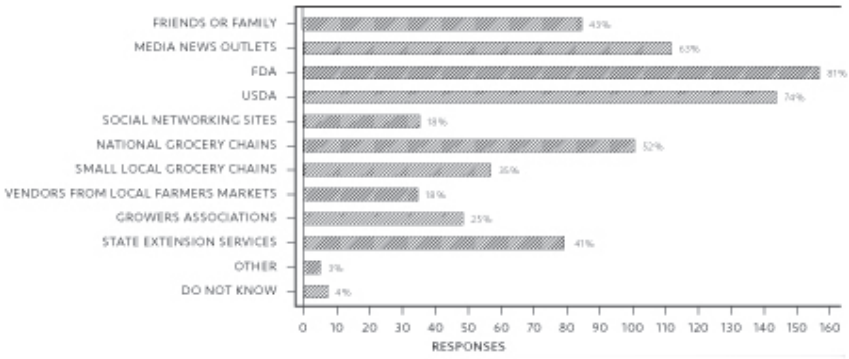
Figure 4 Consumer Preference for Receiving Recall Information



The results in Figure 4 look very similar to the initial survey. Television and media reports were preferred by 34% of respondents, in-store 28%, and online news sources 13%. In addition, social networks were preferred by 13% of the respondents.

Question 2: Most trustworthy source for food recall information
This question added social networking sites (e.g. Facebook, LinkedIn, etc.) as options to the original question. Respondents were encouraged to select all sources in which they place trust. As Figure 5 shows, the order of the top five most trusted entities remained the same as in the initial survey, with the FDA, USDA, and major news outlets being the most trusted. Interestingly, social networks scored quite low with 18% of respondents suggesting that it was a reliable source for information on food recalls.

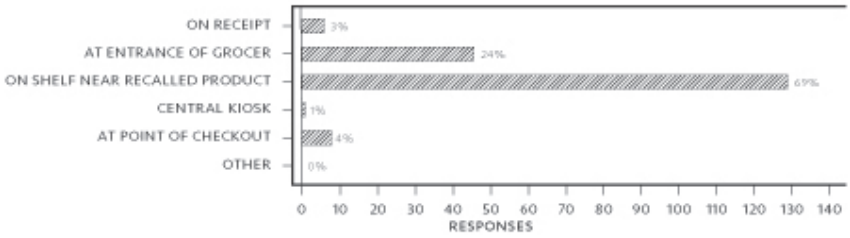
Figure 5 Consumer Trust in Various Food Recall Stakeholders



Additional question: Desired in-store location of food recall information
To better understand specifically where consumers would like to receive food recall information in stores, we asked: If information about current food recalls was available in grocery stores, in which of the following locations would you like to find food recall information. Figure 6 shows the options.

Of the respondents, 69% preferred to find food recall information on the shelf or near where the product was purchased. The next highest choice was at the store entrance (24%). Interestingly, when given other in-store options, few people (3%) preferred to receive recall information on their receipt. Whereas in Hallman, et al. (2008), the receipt was chosen 73% of the time when compared to other traditional means of

Figure 6 Preference For In-Store Recall Information Location



These two consumer surveys suggest that the public would find new methods for communicating food recalls helpful. Specifically, both surveys confirmed previous research suggesting that in-store information would be one of the methods preferred by consumers. However, when given options beyond receiving recall information on the store receipt consumers preferred to receive recall information at the point of purchase (e.g. store shelf, freezer, produce isle, etc.) nearly three times as much as any other in-store location, and over twenty times that of the receipt.

The surveys also suggested that federal agencies were the most trusted source of recall information. This may be important in considering new models of communicating recalls. For instance online social networks appeared to lack the trust of the public, indicating that efforts to utilize these networks should consider ways to develop a greater sense of trust.

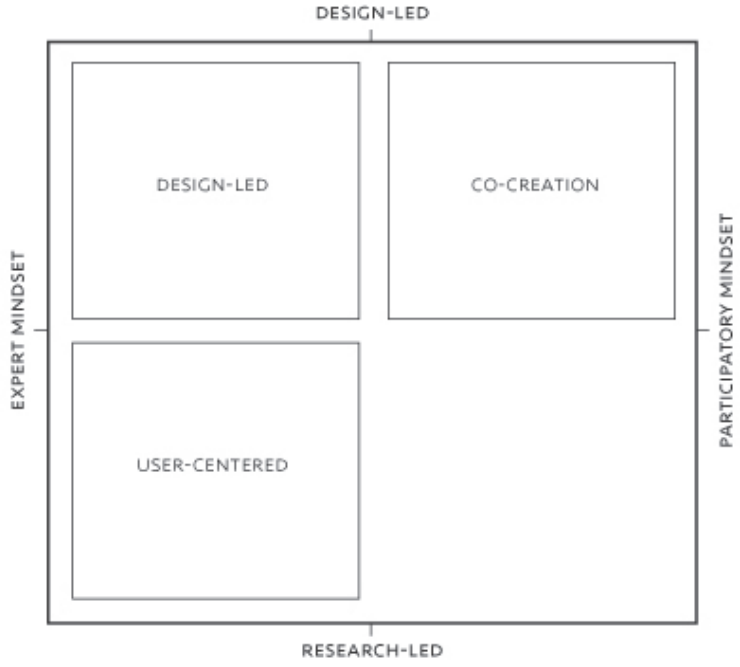
Conclusion

Changes in the FDA, the food industry, society, and technology have altered the landscape of food recalls. Two consumer surveys confirmed previous research suggesting one of the most preferred methods of receiving recall information is inside the store or retail setting. Further data suggests that consumers prefer to receive recall information at the point of purchase (e.g. store shelf, freezer, produce isle, etc.) – nearly three times that of other in-store locations. The surveys also suggested that federal agencies were the most trusted source of recall information. This may be important in considering new models of communicating recalls. For instance online social networks appeared to lack the trust of the public, indicating that any efforts to utilize these networks should consider ways to develop a greater sense of trust or reliability.

<u>Next steps</u>

Changing the way recall information is communicated to the public is a broad undertaking. It is believed that a diverse research plan like the one in Figure 1 will allow for the evolution and feedback necessary to envision new ways of communicating food recalls. The methods are derived in part from André Liem and Elizabeth Sanders' Framework For Positioning the Three Perspectives on Non-Technologically Driven Product Development Processes (2011) depicted in Figure 7.

Figure 7 Framework for Positioning the Three Perspectives on Non-Technologically Driven Product Development Processes (Liem and Sanders, 2011)

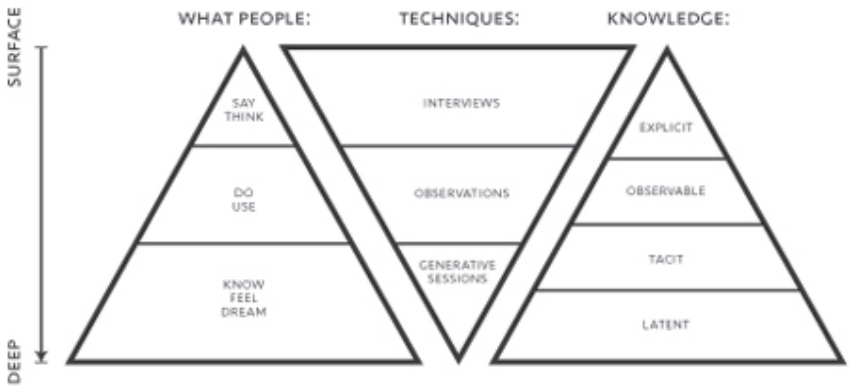


Progressing counter-clockwise from the upper right quadrant of Liem and Sanders' framework, the project includes the public in the early stages of design exploration through methods found in the "Co-Creation" quadrant. The next stage of the design process will give designers more control through critical design methods found in the "Design-Led" quadrant. Initial prototypes will then be tested with users through methods found in the "User-Centered" quadrant of Liem and Sanders' framework.

2. Co-Creation Stage

Visser, et al. (2008) and others have advocated co-creative design methods in the development of new products. Visser, et al. (2008) suggest that traditional methods of studying users (interviews, observation, and focus groups) reveal little useful information in the design of future products. The authors suggest, "For learning about potential future experiences, we need to include peoples' dreams and fears, their aspirations and ideas" (122). They cite Sanders' earlier work (1992, 2001) with generative techniques as a way to gain insight into the tacit and latent knowledge of users and present the diagram in Figure 7 that illustrates the value of generative design methods in giving depth to the understanding of constructs. Sanders states, "The biggest opportunity for improving the quality of products that we design today is to practice collective creativity with 'users'" (2001: 2). She quotes architect Christopher Alexander in the same article, "People need and have a right to determine and shape their own environment.... They are the only ones who know in a profound way what they need" (2001:2). In a later piece, Sanders and George Simons (2009) also suggest that the earlier co-creative approaches are implemented in the design process the more impact they have.

Figure 8 Contextmapping: Experiences From Practice, (Visser, et al., 2008).



The Co-Creation stage of this project will involve working with consumers in a series of generative workshops. In the workshops, participants will be asked to map their consumption of food and media, consider their shopping patterns and existing information systems to envision both realistic and absurd ways of communicating food recalls to consumers.

3. Design-Led Stage

In his exploration of critical design methods, Simon Bowen suggests that working with the public to reflect on critical artifacts is an effective way of gaining insight into "social and physical" design contexts (2009:441/3). Bowen states, "Stakeholders' responses to direct questioning strategies tended to be limited by their current experiences and they had difficulty engaging usefully with novel product ideas. However when critical artifacts were presented for stakeholders' evaluation, the ensuing discussions usefully informed the understanding of the designer participating in those discussions." The use of critical design methods will enable designers to respond to feedback from the Co-Creation stage of the project, and allow them to lead the exploration of new food recall communication methods, without neglecting consumer input and feedback.

The Critical Design stage of this project will involve a series of reflective workshops that engage designers and participants in discussing progressively more relevant artifacts that might be of value in understanding how to better communicate food recalls.

4. Prototyping Stage

The Co-Creation and Design-Led stages will inform the design of prototypes that will be tested for specific performance issues during the user testing stages.

5. User-Centered Stage

User-centered testing will allow designers to establish benchmarks for specific aspects or features that might assist or hinder in the communication of food recalls. For instance, a scanning feature may allow consumers to check that products are not included in any current recalls. User testing may help determine if such a feature would increase

consumer confidence and understand if the feature should be considered.

6. Refinement Stage
The results of user-centered testing will inform the iterative design of prototypes that will be tested through further user-centered testing and comparison to the initial benchmarks.

7. Implementation Stage
Testing of the final prototype design in a retail setting through limited implementation would allow for collection of real-world testing of the outcomes of a new food recall communication system.

8. Evaluation Stage
Evaluation of data from the Implementation Stage may shed light on how the recall communication system affects cognitive, behavioral, and financial factors.

These stages could help document the value of a redesigned food recall system to food producers, processors, and retailers and could help envision what a future food recall communication system might look like.

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GLIDE12: CONSUMED

DESIGNING FOOD CULTURES: PROPAGATING THE CONSUMPTION OF SEAWEED IN THE AZORES ISLANDS THROUGH RECIPES

DR. SÓNIA MATOS.

ABSTRACT

Despite the existence of resources, the age-old tradition of foraging and consuming seaweeds from the coastal shores of the Azores islands is today almost non-existent. Biologists specializing in edible macroalgae of the Portuguese coast recognize that what may be lacking are levels of awareness and engagement amongst communities of practice (for example cooks and restaurant owners) and lay people alike (Neto, 2011; Pereira, 2011; Sousa Pinto, 2011). In an attempt to fill this void thereby addressing issues of sustainability and dietary health, I conducted a pilot study to revitalize the foraging and consumption of wild seaweed through the co-development of recipes for a future cookbook with communities of practice and lay people from the Azores Island.

I begin with an overview of the contextual background of the Azorean foraging tradition and the region's health status. Next, I present the problem that this study aimed to address – the challenges to Azorean diet, health, and environment caused by the suppression of a food cultural tradition that conceals a healthy relationship with food along with the surrounding environment. A methodology section follows in which I describe participatory action research (PAR), a qualitative research approach aimed at developing forms of 'knowledge in practice' within context. Then, I present two different subsections of data collected from conversations with key stakeholders in the island of Flores that informed a series of cooking sessions with other stakeholders from two cooking schools in the island of São Miguel and Terceira. In the final section, I discuss the key findings that have resulted from the pilot study including the notion that the design of food cultures requires action and participation within context.

Key Words: dietary health, foraging, sustainability, recipes, cooking

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FULL PAPER

Introduction: Food for Discourse

Far off the coast of Portugal and toward the middle of the Atlantic Ocean, one finds the Azorean archipelago. With nine islands distributed across three main groups, this Atlantic region presents a temperate climate and a total population of 246,746 (INE, 2012). Once pristine and untouched by mankind, the Azorean islands reflect the adaptation of mostly agricultural people from Portugal to a new and untamed environment. Despite the populations' cultural background and the intent of King João I to use the Azores as a cultivation ground for cereals, grapes and sugar cane (Diffie & Winius,1977: 305), the newcomers had to adapt to the geographical and

climacteric conditions and in more extreme cases, such as in the island of Pico where volcanic rock is abundant, they often had to "seek in the ocean what the land could not offer" (Gomes Vieira, 2012).

If the early Azoreans would soon find ways of working the volcanic land by planting and breeding animals they would also find, in the surrounding shores, new delicacies such as limpets, barnacles, octopus, seaweeds and a variety of fishes that would later influence the development of what could be qualified today as an 'Azorean regional kitchen'. And while some of these delicacies continue to strive amongst both local, and more recently, the tourist population, some have fallen into disuse or even oblivion. This is the case of seaweed such as the Porphyra sp. type, mostly known as laver in the English-speaking world, nori in Japan and erva-do-calhau (meaning 'grass-from-the-rocks') or erva-patinha (meaning 'little-duck's-grass') in some of the Azorean islands such as the islands of Pico and Flores. One can associate this neglect with the difficult and arduous task of collecting these 'plants' from the wild seashore in the intertidal areas, with the Porphyra's seasonal development (only available from January to March) and with the introduction of new lifestyles and eating habits that have developed alongside.

While the first two points seem to be less influential – see for example the popularity of limpets despite their seasonal scarcity and development in similar intertidal locations – the last point seems to strike the right cord particularly when we think of the rather unattractive nature of seaweed, at least on first encounter. And while for example the consumption of limpets have very easily blended with other local ingredients and delicacies, only one seaweed dish – still known in the island of Pico and Flores as tortas-do-calhau or 'patties-from-the-rocks' – has so far survived in the island of Flores and more than often as a local 'exotic' delicacy.

On the island of Flores the foraging tradition is still transmitted from generation to generation – even though here it is also slowly declining (Dias, 2012). Generally, the seaweed is not considered a popular aliment throughout the archipelago; a fact that is mostly influenced by a globalizing process that affects food industries around the globe (Goody, 2008). In fact, today, the region largely consumes horticultural produce imported from elsewhere (A União, 2012); a phenomena that affects both the Azorean archipelago and the Portuguese continent more broadly as the socio-cultural and economic detachment from agriculture, fisheries and all other primary sectors of production has brought adverse consequences for both the economy and Portuguese society as a whole (Freire & Parkhurst, 2002).

Despite the lack of a regional and national dietary survey (EU, 2009: 351), it is possible to assert that today the country does not differ from a global trend whereby developed nations witness an increase in the rates of obesity (Padez, 2006) and related chronic diseases. In fact, today, both the Azorean and Portuguese diet reflect a global phenomena that has been largely affected by 'progress' and the development of methods of food production and transformation. These methods emphasize refined carbohydrates and processed foods or 'techno-foods' (Nestle, 2007) – that have dramatically 'altered the patterns of health and illness' (de Almeida et al. 2007) in the affluent West and beyond (Young, 2012). With severe

health and environmental consequences (Cook et al. 2000), the new highly processed 'techno-foods' are largely supplanting local resourced edibles – such as seaweed – that have potential to yield a diet with higher nutritional value (Gottlieb & Joshi, 2010) and are friendlier to our planet (Natural Resource Defense Council, 2007) when sustainably foraged.

Problem Statement

Seaweeds are thought to be future 'super foods' as they can compensate severe nutritional deficiencies of iron, calcium, proteins, amino acids, vitamins and fibers (Baptista et al. 2011; Patarra, 2008; Pereira 2008: 2-3, referring to Saá 2002). With this in mind, this pilot study addresses the following question: How might the foraging and consumption of seaweeds from the Azorean coastal shores be revived considering its nutritional value and history as an ingredient of the local Azorean diet and largely consumed due to the scarcity of other aliments?

Methodology

Using PAR to understand local foraging of and cooking with seaweed in order to develop recipes

To begin, I identified key local stakeholders that would converse with me about cooking with seaweed within domestic and professional cooking environments and participate in the development of recipes. The ultimate goal of these conversations was to collect ethnographic data including local recipes, personal stories and themes relating to the foraging tradition. The local seaweed foraging tradition was used as a key topic for discussion and development of unstructured interviews where questions were woven into a fluid interaction and where four main points guided the discussions:

1. When the subject was introduced to this practice and by whom
2. The varieties of seaweed that were eaten and/or included in a particular recipe
3. Local perceptions of this aliment today
4. The importance (or not) of safeguarding this tradition.

I selected stakeholders based on their interest in the project and their roles within these insular communities. I identified a local restaurant owner, a family with local roots, and students at local culinary schools.

Mrs. Rosa

On a first visit to the island of Flores during the month of January 2012 I connected with local restaurant owner Mrs. Rosa who informed me that even though locals will sporadically ask for tortas-do-calhau, this delicacy is most popular amongst tourists. And despite the fact that her restaurant does not present this dish on the menu, visitors will often ask for the seaweed patties. In an attempt to satisfy the visitors' palate, Mrs. Rosa collects seaweed from locals during the winter months and then freezes the edible 'plant' in order to guarantee sufficient supply during the warmer months of the year.

Over the course of one week, it soon became clear that Mrs. Rosa, a

native of the island of São Miguel in the western group of the archipelago, was only introduced to the seaweed patties when she moved to the island of Flores and after marrying a local islander. Her first impressions were not positive and she did not understand how one could eat seaweed, a 'plant' that was used as bait in her native village to catch pork-fish. After working with a group of women in the local fish factory in the island of Flores she soon learned the patty recipe and started foraging and preparing this delicacy at home for her family.

The conversation with Mrs. Rosa regarding her introduction to the consumption of seaweed was complemented with a cooking session in her restaurant kitchen where she was able to demonstrate her version of the seaweed patty recipe (one that uses wheat flour as opposed to corn flour which has for long been the staple flour used in the Azorean region). Mrs. Rosa very intuitively described the quantities, ingredients, cooking steps and possible side dishes ranging from rice, feijoada or even with potato chips and fruits such as local pineapple and grapes (a very popular way of serving fried food in the archipelago).

The Dias family

During the same visit to the island of Flores I also conversed with Elisabete Dias and her family. A young biologist from Flores now residing in the island of São Miguel, Elisabete has been eating the seaweed patties since a young age. In fact, her parents very often acquire the seaweed from locals while preparing the patties at home. Her first encounter took place in the Porto do Boqueirão, a former whaling harbor near the main village of Santa Cruz. Here Elisabete explained the foraging procedure:

'Never turn your back to the ocean. The goal is to gently pull, and while rolling the fingers around the fronds, without completely extracting the holdfast so as to guarantee that the species will grow during future seasons' – pertinent information for those new to the foraging practice.

While attempting to approach the shore and after spotting a vast tuft of seaweed, Elisabete explains that most locals know where to find the Porphyra seaweed even though the consumption of this rich aliment is largely being replaced by other more 'trendy' and 'international' products imported from elsewhere. This trend, she says, is particularly strong amongst the younger generations that identify the seaweed patties as a 'thing of the past' in fact confirming a tendency in many 'developing' regions where traditional foods are replaced with an often prejudiced understanding of certain aliments as 'hunger foods' (van Esterik, 2006). After various unsuccessful attempts to approach the shore, soon we made our way to the bay of the Fajã Grande village where the harvest was bountiful.

Back in the village of Santa Cruz and in the middle of pots and pans, Elisabete and her mother take on the lead and explain every step as they prepare and cook the patties:

Figure 2 Top: Edible Aroids in the Westerm World; Bottom: Edible Aroids in the (Sub) Tropics © Grahame Jackson, INEA

First one has to carefully wash the seaweed. And even though today one could use tap water traditionally one would use seawater, a method that will help preserve the original flavor. After, the seaweed is carefully washed and all rocky particles and sand are removed one has to carefully cut the seaweed. After the seaweed is chopped, we add the garlic and malagueta pepper paste, a local and mildly hot staple ingredient. At this point, Elisabete and her mother explain that there are two traditional recipes; one is simply fried using corn flour. For the other recipe, we have to incorporate an egg or two (depending on the number of people) and gently form the patties, later frying them one by one.

As the cooking proceeds we continue conversing and soon Elisabete's father joins to explain that in the 'old days' the majority of consumers of patties were the most impoverished even though one could not really find rich people in an island that mostly subsisted on an economy of direct trade and where money was a rarity. This is not to say that wealthier islanders did not eat the patties. In fact, they did while adding other and more precious ingredients such as limpets. The patties were fried in animal fat and eaten with bread so as to console the stomach during the winter months. Alternatively, the seaweed was often added to fish broths as a way to add flavor.

Mr. Dias also mentions that even though today we might qualify the patties as an unhealthy dish – mainly due to its frying procedure – in the 'old days', the amount of physical activity that locals performed while carrying out agricultural, fishing or whaling tasks compensated for a fatty diet that was mostly produced while using local animal fats as opposed to the imported and highly processed cooking oils that can be found today with abundance on the shelves of local shops.

Soon, the Dias family sets the table and serves both versions of the patties with bread and a glass of red wine. The taste is wonderful and immediately reminds us of all those dishes associated with the sea. The egg, garlic and corn flour add a more familiar flavor that is common to both the Azorean and Portuguese palate. As to my final question regarding the role of seaweed in the development of future Azorean cooking practices, the Dias family oscillated between two different generations. Elisabete, even though not always engaging with this practice, defends the importance of safeguarding the tradition due to its ecological value and health benefits. Her father, Mr. Dias, tends to imagine it as a 'hunger food', a thing of the past, a tasty snack that can be consumed now and then.

Students at culinary schools in the Island of São Miguel and Terceira

Taking into account the challenges set forth by Mrs. Rosa and the Dias family I decided to broaden the array of stakeholders. I conducted two workshops at two culinary schools situated in the most populous islands of São Miguel and Terceira during May 2012. Here a challenge was presented to the students, aged 17-30, to create a series of recipes using four types of locally foraged, locally sourced and highly nutritional seaweeds: the Porphyra sp. (laver), the Ulva rigida (sea-lettuce), the Fucus spiralis Linnaeus (spiral wrack) and the Osmundea pinnatifida (pepper-dulse). I chose to use these students as stakeholders because their future roles as local chefs and trendsetters would enable the dissemination of the seaweed foraging tradition amongst the islands where this practice can no longer be found.

Some students were initially reticent in associating seaweed with food, and thus responded unexpectedly by creating sweets. And though most of the dishes displayed in Figure 2 demonstrate their interest in a gourmet style of cooking, other dishes such as the 'Taro Root Omelet with Sea-Lettuce', the 'Pork Cheeks with Spiral Wrack Vinaigrette' and the 'Creamy Rice with Limpets and Laver' demonstrate a closer appreciation of existing local dishes.

Once the three-day workshops ended, both the chefs and myself sat down with the students and discussed the project. One of the main guiding questions regarded the way in which the act of working with the different seaweeds had or had not altered the students' perception of what is edible. The students presented ideas regarding the sensorial qualities of the different seaweed – like the sea lettuces' green transparent gradients, the pepper-dulse's rich fiery flavor, the laver's nutty hint and the spiral wrack's tangy bite. These responses demonstrate potential for future culinary experimentation and the development of more complex sensorial information that can be passed on to other chefs, foodies and the general public through a cookbook.

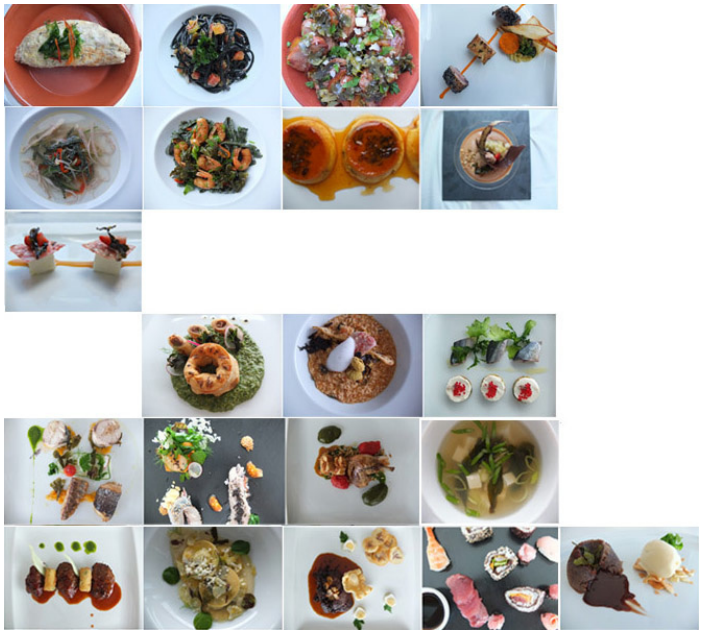

Figure 2. Dishes produced by the 3rd year students from the Professional School of Praia da Vitória, from left to right: 'Taro Root Omelet with Sea- Lettuce'; 'Pasta Nero de Sepia with a Sea-lettuce Pesto'; 'Pork Cheeks with Spiral Wrack Vinaigrette'; 'Tuna Tataki Rolled in Pepper-Dulse and Laver Dumpling'; 'Chicken Soup with Laver Noodles', 'Laver Noodles with Shrimp and Spiral Wrack Vinaigrette'; 'Flan Pudding with Pepper-Dulse Caramel'; 'Pepper-Dulse Chocolate Mousse with Orange Crystalized Spiral Wrack', 'Lemon Sorbet with Strawberry and Pepper-Dulse Crisp and Orange Crystalized Spiral Wrack'.

Dishes produced by the 3rd year students from the Tourism and Hospitality School of Ponta Delgada: 'Tender-dough Pie filled with Regional Loin Stew with a Puree of Pepper-Dulse and Sea-lettuce', 'Creamy Rice with Limpets and Laver', 'Blinis with Regional Cheese Mousse, Dried Sea-lettuce and Local Smoked Mackerel', 'Two Textured Horse-Mackerel with Spiral Wrack', 'Regional Fresh Mackerel with a Spiral Wrack Vinaigrette Salad', 'Chicken stuffed with Local Sausage and Wheat and Pepper-Dulse Stew', 'Tuna Consommé with Pepper Dulse and Fresh Cheese', 'Pork Cheeks with Fig Sauce and a Sea Lettuce Croquette', 'Ravioli stuffed with different Seaweeds on a Bed of Cauliflower Puree', 'Regional Style Steak with Pepper-Dulse Sauce', 'Sushi made with a local Nori and a Selection of Regional Fishes', 'Pepper-Dulse Chocolate Fondant' served with 'Sea-lettuce Ice-cream'.

Analysis of Data

The conversations with Mrs. Rosa and the Dias family provide an opportunity to introduce a rather valuable discussion regarding the cultured assumptions behind our understanding of what counts as food and non-food. As proposed by food anthropologist Amy Trubek in 'The Taste of Place' "the reasons we refuse to eat certain foods are not arbitrary, but mediated by cultural beliefs and practices" (2008: 7). This resonates with Isabel González Turmo's (2009) discussion of the various factors that come into play as we attempt to distinguish foods from non-foods. These factors can be highly personal and idiosyncratic – based on personal taste or even gender – but also highly cultural and largely informed by our identification with particular cultural groups, geographical locations and available resources. This largely explains why certain islands, such as the island of Flores and Pico, have formerly adopted the consumption of seaweeds as opposed to islands such as the island of São Miguel where agriculture and farming has always played a prominent role.

There is an inverse relationship between the ways in which local visitors valorize the seaweed patties and the ways in which local populations at times perceive this aliment as 'a thing of the past', a 'hunger food', often ignoring the potential nutritional and gastronomic value and variety. While taking this information into account three important guidelines were identified:

1. The importance of reversing this effect
2. The importance of further extending the interaction with more stakeholders while developing new recipes that will later integrate into a community cookbook
3. The importance of working with the PAR research framework while incorporating practical knowledge that will resonate with a local community of stakeholders

Focusing on the last point, this pilot study also suggested that this practical information is of course amenable to change. This is particularly relevant when analyzing the ways in which the young chefs:

1. Reject (e.g.: the way in which the patties are traditionally fried in animal fat)
2. Assimilate (e.g.: the way in which they used local existing ingredients such as the tarot root now combined with the seaweed)
3. Reinterpret (e.g.: their use of Azorean laver to create nori sheets for the Azorean sushi dish)
4. Negotiate (e.g.: the use of seaweed in the confection of a popular seafood/ pork recipe)
5. Reinvent (e.g.: the use if seaweed in the confection of sweets)

This process resonates with Peter Scholliers (2001) understanding of culture as a largely performative act whereby processes of identification (as opposed to identity) result from the reenactment of everyday practices (p.7).

Hence the development of the recipes with the stakeholders at the culinary

schools expresses the community not as a static and fixed identity, a tradition worthy of preservation, but rather sets forth ways in which its diverse range of actors identify with various aspects of their local and global environment and culture. However, and while one can quickly assess the quality of the students' culinary experiments, their preferences also largely contrast with Mrs. Rosa's and the family Dias' approach. In the attempt of developing recipes that will account for a vast array of Azorean voices and flavors, this pilot study has equally identified the growing necessity of developing similar workshops amongst other pertinent insular social-cultural groups and key stakeholders.

Conclusion

In order to facilitate a comprehensive understanding of the overall project I will attempt to momentarily discuss the defining moments, key questions and points while emphasizing the importance of instigating a participatory and action-based research in the development of recipes. Briefly assessing the work developed so far it is important to set forth the following questions:

1. How will the cooking sessions with key stakeholders and the design of recipes for a future cookbook inform the Azorean population regarding the significance of collecting and identifying edible seaweed in the wild?
2. How will the coordination of these two elements affect the sustainable and healthy development of the region?

Taking once again Schollier's (2001) understanding of culture as a largely performative act, one of the most interesting outcomes of current grassroots movements, that have actively attempted to intervene in the ways in which we produce, treat, access and consume our food, is that they have resonated with local audiences and while using a diverse range of mediums of communication and distribution such as television, printed media and the internet (Gottlieb & Joshi, 2010) and as proposed by this pilot study, a series of cooking activities and the recipes resulting from this activity. On its own turn, these communities of practice have at times affected the ways in which local authorities have become increasingly interested in fostering healthy eating habits and sustainable methods of food production (Lavine & Salkine, 2011). In this sense, the goal of this overall project – one that is still under way and that can only be assessed over an extended period of time – is to create awareness amongst a local community.

In the Azores, the consumption of foraged seaweed should not be ignored. In fact, this has worked in the past and during periods when the islands were more populated. While some might argue that these 'plants' can only be collected on a seasonal basis therefor limiting their benefits, it is exactly the demands of a seasonal and cyclical diet that a new globally conscious regimen will require, particularly on behalf of wealthier nations. And while the biggest limitation can be seen in the uneven distribution of seaweeds throughout the nine islands as well as the limitations in accessing some of the areas where the seaweeds can be found (Neto, 2012), the reintroduction of seaweeds in the Azorean consciousness has the potential to instigate attempts to sustainably harvest some of the 'plants' as

already practiced for many decades in countries like Japan. And while we can only wait for these opportunities to come, for now we will continue foraging and cooking; exploring the rich flavors of these marvelous and delicate 'plants'. Until then – bom apetite!

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MAPPING EDIBLE AROIDS

KARIN VANEKER AND ERWIN SLAATS.

ABSTRACT

As the world's most ancient food crops, aroids or taro (L. Araceae) are embedded in many western and non-western cultures. 'Everybody' knows aroids. However, as plants and foods, they are reputedly difficult to recognize. The plants, but also aroid dishes, are of economic importance and an expression of social and cultural values for around 400 to 500 million people worldwide. However, aroids are little known outside of non-western food systems. The cultivation of aroids is foremost restricted to small farmers, and its consumption to ethnicities in and from sub-tropical regions and the developing world, where 60% of the world's food is produced by around two billion small farmers, the vast majority living in extreme poverty. In the Western world millions of migrant workers consume aroids; and both migrants and edible aroids are held in low esteem.

Interestingly, several members of the aroid plant family are among the world's most popular ornamental plants and held in high esteem by millions of westerners. Through art and design, these iconic ornaments have permeated western culture. Thus, aroids are part of broader realities. However, in spite of their economic and cultural importance and the recognised potential for wider use, outside of botany, natural science and non-governmental organizations (NGOs), edible aroids are a little known crop that have received scant attention. They are orphan crops with a not yet fully exploited potential to contribute to food security, poverty reduction and biodiversity. In the context of the world, and by communicating relevant aspects of aroids and the international food debate, this paper seeks to show and incorporate relevant, if not opposite, social dimensions of its uses.

The information presented in this paper is based on ongoing research into the worldwide distribution and use of edible aroids that includes observations, field work, desk research, writing, and formal and informal interviews and communications with end-users and specialized researchers conducted since November 2003 (e.g., Vaneker, 2007a; 2009b; 2011c; 2012d; 2012e). Propelled by the contribution of geographical maps to theoretical studies of food, this paper seeks to address the following questions:

1. How can data visualization through mapping contribute to intercultural communication between the various social dimensions that are familiar with aroids?
2. How can data visualization through mapping bridge the cultural, physical and mental distance between the communities cultivating and consuming aroids and those familiar with aroids as ornamentals?

The paper begins with a literature review on the social and cultural dimensions of food. The first section also provides information about the nutritional value of edible aroids and an overview of the various communities familiar with aroids. The next section highlights the socio-

visual dimensions that inhibit global cognizance and appreciation of aroids as edible; and the Methodology section explores the use of data visualization through mapping as a method to contribute to intercultural communication between the various social dimensions that are familiar and unfamiliar with aroids. The Data section shows the distribution of edible aroids in the context of the world and the world's poorest countries. We conclude with a reflection about the future studies of edible aroids in the global food system.

Key words: aroids, ornamental plants, visualization, mapping, food studies, food design

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FULL PAPER

Introduction: Food for Discourse

In the early 1970s, British anthropologist Mary Douglas observed that "[t]he absence of serious research into the cultural and social uses of food is caused by a more fundamental separation between food sciences and social thought" (1973 ed. 2003:2). Parallel to images and information, shifts in society resulted in new perceptions of food that by now have permeated every aspect of life. By reflecting upon the role of food in the social order, Douglas shifted the focus of scholarly interest (research) from the biological function to "social drama" (Jones, 2007). Food being part of the home and hearth, it inspired Douglas to investigate and ponder about the meal, resulting in her writings on the role and mysteries of food and categorisation in her landmark book Purity and Danger (1973 ed. 2003). Douglas started building on the work of scholars such as Margaret Mead and Claude Lévi-Strauss, the French cultural anthropologist on record as the first to demonstrate that cooking transforms food from nature into culture (1964).

At the end of the 20th century, interest into the cultural and social uses of food, in foodstuffs, gastronomy and 'food politics' has seen unprecedented change, and has gone from scarce to superabundant. Food became a popular topic for public discussion and academic discourse in the mid-1990s, resulting in a legitimate academic field that studies food from multiple perspectives, and methods from various disciplines and schools of thought. Currently the field is known as 'food studies' and considers multiple points of view from disciplines such as anthropology, sociology, history, but also nutrition, economics and statistics (Nestlé & McIntosh, 2010:159-179). Reflecting upon the history and recent developments, according to food scholar Darra Goldstein "[t]he study of food is not only acceptable but chic, and numerous academic disciplines are now embracing dissertations that explore issues surrounding food" (Smith et al., 2010:326-329). Since the establishment of 'food studies', the culinary revolution has expanded into other areas of popular, academic and visual culture.

Today, what we eat, where we buy our food, and why we eat certain foods and refrain from eating others, even our culinary heritage, is subject

to popular and scholarly discussions (Belasco, 2008; Nestlé & McIntosh, 2010; Smith et al., 2010). The transformation of food from nature to culture into 'social drama' is the result of vast changes in food production and consumption that started during the Industrial Revolution and has continued ever since. Since the beginning of the 20th century, the home garden and the 'Mom and Pop store' have been rapidly replaced by agribusiness and the supermarket. In the western world, instead of being part of the home and the hearth, food production and consumption have become part of a global foodscape that is dominated by industrialized (convenience) foods.

The physical and mental distance between the food that is on our plate and nature or the biological, resulted in a growing intellectual and cultural interest in food, all contributing to the acceptability of food as a topic for literature and conversation (Belasco, 2008:4-7; Freidberg, 2010:484). Currently there are many more meanings attached to food than is visible on our plates. Food aroids cross disciplinary boundaries; research on aroids is carried out , for instance, by natural scientists, botanists or aroids enthusiasts alike. However, the social, cultural and visual dimensions of aroids in the global food system are often research neglected areas (Ramanatha et al., 2010; INEA 2011). Apart from a legitimate field of academic studies, food more often today is considered a vehicle for artistic self-expression (Belasco, 2008:52). Since the 1990s, and following in the footsteps of the first 'food designer' Martí Guixé (Raimondi, 2011), a growing number of designers and artists are trying to bring new meanings to food through publications published by Gestalten, for instance, that reflect the popularity of 'food design' (See: http://shop.gestalten.com/books/food-and-beverage.html) and food design that wins competitions sponsored by the International Food Design Association (See: ifooddesign.org). Courses offered via the ifooddesign.org show that the 'food designer' or 'food artist' even has become a new profession and a new design discipline. In recent years, both in art and design, food more often is used to communicate messages and meanings, and to emphasize, reinterpret, explore or characterise existing relationships between food and food consumption.

Lacking a 'perfect' recipe, food studies now crosses disciplinary boundaries, and can encompass foodways, gastronomy, culinary history, as well as discipline-based approaches (Belasco, 2008; Nestlé & McIntosh, 2010:159-179). It is also generally understood that humans come to a situation with a different body of knowledge and presuppositions, and "...for when it comes to eating, humans are generalists, i.e. omnivores" (Belasco, 2008:7). In addition food studies should not be hindered by "separate spheres" or as Belasco states: "...to help us sort out the issues and gain some needed perspectives, we need generalists" (2008:3, 7). The most common objective of food design is to alter features and interfere with food(products), or as a 2006 Food Design Manifesto from the Italian Associazione per il Disegno Industriale (ADI) states: "Food Design is the culturally-aware design of products in which food and tools work closely together, blending the features necessary to meet a requirement linked to the consumption of a food product, into a single interface" (ADI, 2006).

Edible Aroids

Globally, roots and tubers are considered important staple foods. Aroids, or taro (L. Araceae), are the sixth most important root and tuber crops, and rank fourteenth among staple vegetable crops, and are thus significant in the global food system (Scott et al., 2000; Ramanatha et al., 2010). Aroids are a reputedly difficult group of plants to recognize, the identification of the many different wild and cultivated aroid genera and species requires a trained eye (Bown, 2005). According to botanist Simon Mayo, a leading authority on aroids, "[a]roids, or Araceae, are plants which everybody knows but relatively few people recognise" (2005, 11). In contrast to major staples such as wheat, rice and potatoes, for which overlapping names exist, aroids lack vernacular names that can be widely recognized or adopted. Already in the 1970s, the confusing nomenclature inspired Julia Morton (1912-1996) to introduce a general name for aroids, the American botanist states "The existing confusion is a serious matter for the agriculturist seeking information." (1972). Currently the only consistent nomenclature for aroids is in Latin (Morton, 1972; Vaneker 2009b; 2011c; 2012e). Aroid genera, but also aroid species and their edible plant parts, carry a multiplicity of overlapping, common and uncommon names in numerous languages and dialects such as belembe and cocoyam, dalo, eddoes, kimpool, malanga, rascadera, tales and macabo (e.g., Flach, 1996; Elevitch, 2011; Vaneker, 2012e).

Figure 1 Anthurium on a Dutch Windowsill © Karin Vaneker

The aroid plant family comprises over 120 genera and 3750 species of which many are used as food, medicine, animal fodder, ornamental plants and cut flowers (as depicted in Figure 1). As a food, aroids have been maintained by farmers for millennia in a wide range of agro-ecologies, including marginal, complex and often harsh environments, still they are little known outside of non-western food systems, (Ramanatha et al., 2010; INEA 2011). Apart from an ecological unique crop, as a plant and food, aroids are embedded in many western and non-western cultures

where they are often perceived as intrinsic to cultural identity (See Figure 2). All plant parts of aroids are edible, and the plant (parts), but also aroid dishes, often carry a deep symbolic meaning and cultural value (e.g., Matthews, 2004; Ramanatha et al., 2010; Elevitch, 2011; Vaneker, 2012d; Misra & Nedunchezhiyan, 2012).

Figure 2 Top: Edible Aroids in the Westerm World; Bottom: Edible Aroids in the (Sub) Tropics © Grahame Jackson, INEA

The five most important cultivated aroid genera, used as food, but also medicinal and as animal fodder, are:

1. Alocasia, a genus in excess of 100 species. Common names include Elephant Ear, False or Giant Taro
2. Amorphophallus, a genus of more than 257 species, commonly

known as Elephant Foot Yam, only 4 species are used as food and medicine
3. Colocasia, or taro, is the world's best known aroid genus, since ancient times it is cultivated throughout the tropics and temperate latitudes such as the Mediterranean, China, Japan and New Zealand. The 'Eddoe' (L. Colocasia esculenta var. antiquorum) and 'Dasheen' (L. Colocasia esculenta var. esculenta) are the most popular species (Ramanatha et al., 2010);
4. Cyrtosperma, a small species of aquatic aroids indigenous to Southeast Asia, commonly known as Swamp Taro (Bown, 2005; Misra & Nedunchezhiyan, 2012)
5. Xanthosoma, or tannia, the only indigenous American aroid genus widely used for food. The 2 main cultivated species are the X. sagittifolium (L.) and X. nigrum (synonym L. violaceum)

The main centres of origin and diversity of aroids are tropical Asia and tropical America. Whereas taro, elephant ear, elephant foot yam and swamp taro originate in Southeast Asia, tannia is the only indigenous American aroid widely used for food. Together with taro, genera's of tannia are the most widely grown and consumed aroids (Matthews, 2004; Bown, 2005; Ramanatha et al., 2010).

Problem: Socio-visual Dimensions that Hinder the Global Perception of Aroids as Edible

As a food for the poor and ornament, aroids are part of different if not opposite social dimensions that contribute to its lack of a global reputation as edible. Since times immemorial, plants and flowers have been used for decorative purposes, and are depicted for their cultural value. Because many aroids have a striking inflorescence and leaves, since the beginning of commercial floriculture (Schmidt 2002-2012), around two hundred years ago, new genera and species have been discovered and are cultivated purely for decorative purposes (Ramanatha et al. 2010:1-28). Annually around 50 million ornamental aroids are sold worldwide (Schmidt, 2002-2012; Bown, 2005:24). At present, species of the Alocasia, Anthurium, Caladium, Dieffenbachia, Philodendron, Spathiphyllum, Zamioculcas and Zantedeschia are among the most popular ornaments and cut flowers worldwide. In the Netherlands, aroids are a common feature in living rooms and on windowsills, in recent years, through photography and as unique felt objects, the iconic ornaments became part of Dutch design and art (Claessens; Van Empel, 2006; Den Hollander, 1992-94; Franken, 2011; Driessens and Van den Baar, 2011).

Aroids are primarily cultivated by subsistence-oriented farmers in around 120 sub-tropical countries where smallholder farming is directly and indirectly related to 75% of the poverty in rural areas (Paalberg, 2010). Whereas especially in the western world, the physical and mental distance between the farm and the plate has increased, this distance remains less vast in the non-western world where around 60% of the world's food is produced by around 2 billion small farmers the vast majority living in extreme poverty. In addition, 70% of the food of the around 1.4 billion poorest people in the world is cultivated, in the sub-

tropics and the developing world, the vast majority living in extreme poverty (Paalberg, 2010; INEA 2011; Bioversity International 2012). At present Europe and the United States are home to over 100 million migrants many of which come from poor (sub) tropical areas of the world. According to a United Nations compilation of migration statistics, in 2005, the United States was home to 38 million migrants and Europe to 64 million migrants (United Nations, 2005). Migrant food culture is often shaped by memories of food and eating in the past, in the global North migrants developed a strong appetite for the foods, ingredients and dishes familiar from their homelands and cultures. The transnational (food) trade enabled migrants to procure important traditional foods, and maintain their foodways and food culture (Kloosterman & Rath, 2003; Tuomainen, 2009). Although food habits are among the last cultural traits to change, and "...food is among the most powerful of all social indices of differences and identity" (Mintz 2008:11), migrant food culture is research neglected. As Tuomainen (2009) notes: "Few studies in the past have examined the patterning of food and eating among first and second-generation migrations in detail. In addition, migrant foodways and foodstuffs are often neglected or perceived as inferior. This is also reflected in terminology expressing the inferiority of non-westerners, and in particular Africans. For instance, the German scholar Johann Boemus "...divided the people of "Affrike" not only into "Ethiopians," and "Egyp-tians," but also into numerous clans including..."Ryzophagi" (root eaters)..." (Hudson, 1996) Also nowadays food-related terms play a significant role in the depiction of foreigners and foreignness, and the stigmatization and denigration of minorities and their cuisines ironically using food-related words (Mintz, 2008; Vaneker, 2012d). Vaneker (2012d) discusses examples of the stigmatization of Surinamese food in the Netherlands--"[a]ctually it looks like dirty sludge...[a]fraid to touch it, let alone taste it."

Globalising the benefits of edible aroids

Especially in the sub-tropics and the developing world, aroids are staple food for the rural and urban poor, and a source of income for millions of small farmers. As cash crops, they are an important source of employment and income particularly for men and women (Scott et al., 2000). Also, apart from rich sources of carbohydrates, protein, minerals and vitamins (Opara, 2003), aroids are the oldest cultivated crops. The plants, but also aroid dishes, are an expression of social and cultural values for around 400 to 500 million people worldwide (Scott et al., 2000; Ramanatha et al., 2010). Prior to the 1990s, aroids received scant research attention, only recently international research collaborations and networks, like the International Network for Edible Aroids (INEA), have been established. Due to their importance, in recent years, aroids became part of the global debate about the increase of food production, food security, reduction of poverty, biodiversity, and the protection of the environment (Scott et al., 2000; INEA 2011; Bioversity International 2012) with Ramanatha et al. (2010) being the first publication to explore the global diversity and uses of edible aroids. The question is: Can visualization of geographical maps show the significance and various social dimensions of aroids and consequently generate more awareness for a relatively little known and

stigmatized but important sub-tropical crops?

Methodology

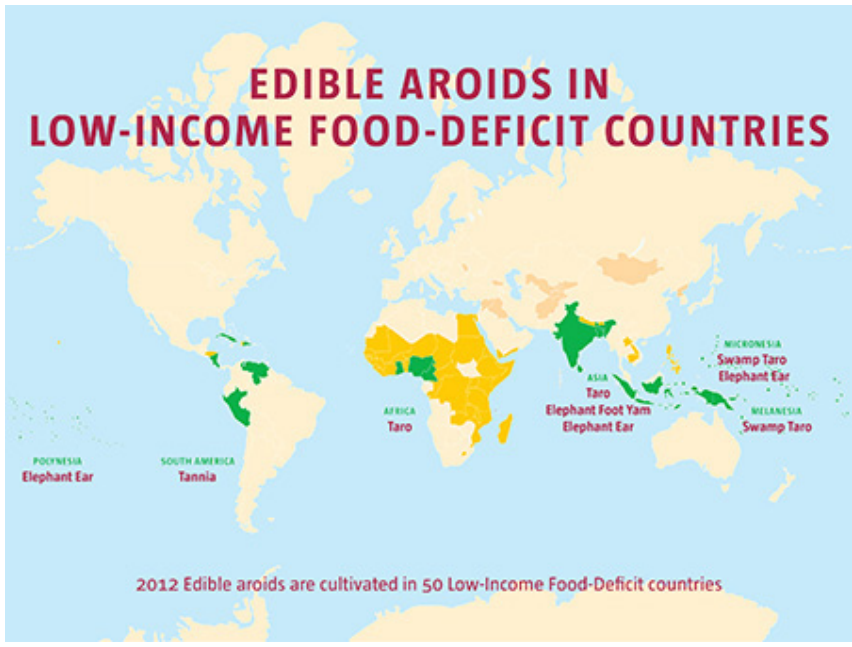
The acclaimed art-critic and writer John Berger writes that "seeing comes before words", when we see images and art we are not just looking, because what we see depends upon our own way of seeing, and when we try to comprehend or explain what we see, we use words (Berger, 1972 ed. 2008). In every social dimension of the world we use words to describe what we read, hear, smell, and taste, and sometimes also make mental pictures of words. Berger observes that although images abound everywhere, there's a growing distance between culture and nature, and instead of a collaboration, human representations of the visible world increasingly demonstrate spectacle (1997).

In addition the world is increasingly information-based, and excessive amounts of images as well as information are constantly competing for representation. The awareness that "seeing comes before words", has resulted in a growing demand for visual information and the development of many new forms of communication design. These changes have affected design and the role of the designer. Currently, communication design is shown, for instance, on billboards and in museums, and designers are more recently becoming authors and researchers rather than packagers of content. Design is not created in a vacuum, but through a process that involves multiple perspectives and various forms of interaction and exploration of the environment.

It is generally assumed that data visualization, as a form of design, can bridge the cultural, physical and mental distance between various social dimensions. Data visualization on the other hand intends to make data perceptible; furthermore, it enables to address existing knowledge gaps, but can also seek to connect and bridge differences between various cultural dimensions. Data visualization in the form of maps are a universal and easily understood medium for intercultural communication.

Consequently the overall objective became to create a visual appealing yet informative visualization of aroids data, and show relevant aspects such as the confusing nomenclature, the global dispersal and the 5 most important cultivated aroids in the context of the low-income food-deficit countries (LIFDC). Currently there are 66 LIFDCs. The list was developed by FAO in the late 1970s, and is determined by 3 criteria (e.g. national income, net food import and self-exclusion).

Figure 3 Mapping the geographical location of edible aroids © Erwin Slaats



There is only a limited number of visual overviews and maps available regarding aroids. To address this gap, from May to August 2011, desk research and data visualization resulted in an inventory of 121 tannia cultivating countries on geographical maps designed by a French visual arts undergraduate student. The maps, some of which are shown in Figure 3, served as the basis for graphically designed world maps and were disseminated at the Global Conference on Aroids: Opportunities and Challenges (Vaneker, 2012e).

Conclusion

This paper has discussed and shown the significance of aroids in the global food system, and various social and cultural dimensions. The maps and visualizations illustrate the vast cultural differences, and the distance between the farm, the plate and the windowsill, but also underline the importance of aroids as a food. By mapping aroids in the context of the world's poorest countries, this paper seeks to contextualise aroids in the global food debate, and thus generate more awareness for an important but neglected staple crop, that in the age of visual communication and the ongoing globalization of the foodscape, holds great promise and potential for the future. In order to contribute to livelihood improvements in the non-western world, and contribute to the future of food and the global food debate, many aspects of the history, social, cultural and visual dimensions of aroids need further exploration.

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About the author

Karin Vaneker graduated from the AKI Academy of Visual Arts in Enschede, the Netherlands and later attended Sint-Lukas, Higher Institute for the Arts in Brussels, Belgium. Since 1999 she has written articles about food for numerous Dutch newspapers and magazines, specializing in the cultural and other histories of ingredients and cuisines. In recent years she has written books, and contributed to several publications and reference works, such as the Encyclopedia of Food Cultures of the World (ABC-Clio), They Eat That? (ABC-Clio), Reimagining Marginalized Foods: Global Processes, Local Places (University of Arizona Press), Oxford Encyclopedia of Food and Drink in America, and the Encyclopedia of Food and Agricultural Ethics (Springer). In 2003, Vaneker started researching edible aroids (or taro), a venture that, in 2007, resulted in an exhibition in Amsterdam and several publications. In 2008 Vaneker & Slaats joined forces to combine their passion for food. This undertaking has resulted in several book publications, and the visualization of on-going edible aroids research. In the process, Vaneker & Slaats profit from their mutual expertise and experience to merge research based-content and visual design.

Erwin Slaats studied graphic design at Sint Joost Academy of Fine Arts in Breda before joining design studio BRS Premsela Vonk in Amsterdam, the Netherlands. After working at Eleven Danes Design (Copenhagen), and for more than a decade, Slaats created visual identities and corporate communications at EdenSpiekermann (Amsterdam), for major clients such as the City of Amsterdam, Ministry of Justice, City of Eindhoven, the Dutch Tax and Customs Administration, TU/e Technical University Eindhoven, and Royal Wessanen. With a passion for food and books, Slaats has been designing several cookbooks and other book publications. In 2010, and with many years of expertise, Slaats founded LekkerOntwerpen (www.lekkerontwerpen.nl). The Amsterdam-based design studio combines tactile and innovative approaches to design. The mission and the motto of LekkerOntwerpen, meaning both ‘nice design’ and ‘delightful designing’, is to receive and transmit content into tangible and aesthetically appealing design. Clientele includes publishers, manufacturers, retailers, corporations and non-profit organisations such as GVB Public Transport Amsterdam, Meet.s Art Point, and Alzheimer Netherlands.