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Social Shopping Using Food Spimes

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Abstract: Bruce Sterling defines *spimes*, in part, as extensively rich streams of data and information about *things*. From a theoretical viewpoint, the concept of *spimes* is indeed interesting, with seemingly endless possibilities for enriching our knowledge about the *things* all around us. In terms of our everyday decision-making activities, *spimes* could have significant influence on our behaviours, empowering us to make more informed choices. No where is this more true than in topics relating to sustainability, especially in how sustainability relates to the selection of the food that we eat. With vast amounts of information available, the issue of selecting *good* food can be difficult and more adequate support is needed. This paper proposes a framework for design by discussing a model of social interaction which encourages, engages, and motivates consumer participation, enabling consumers to share experiences and bridge knowledge barriers. By developing a framework for community support in such respects, we ensure information quality, transparency, and potentially provide more effective consumer support accordingly. Thus, we have a greater chance of choosing *better* food selections, specifically those from the perspective of integrating more sustainable choices in our everyday food selections.

Keywords: Food; Decision support, Knowledge collaboration; Visualization; Interaction design

1 INTRODUCTION

Imagine you are planning a trip to your local grocery market to purchase food items for the coming week. Having recently become more conscious of the type of food products you purchase, you are most interested in finding *good food* items, those specifically high in quality, with excellent health related benefits, produced locally (or as local as possible), and within your budgetary constraints. Using your laptop you connect to an online community repository which provides a listing of various food items available in grocery markets close to your residence as contributed by other shoppers in your community. The repository comes complete with consumer compiled product ratings and other consumer contributed informational qualities relevant to your food selections and shopping preferences. The online system enables you to hone in on your preferences, allowing you to analytically and visually compare selected food items. Finding items of interest and their location of purchase you set out to the appropriate local grocery market.

While browsing the market, you find other items of interest. Wishing to compare these selections with potential alternatives you utilize your mobile phone to capture product serial codes/labels.

Having the ability to upload product data to the community repository, you do such and are able to make visual comparisons. Analytically comparing your selections using supplied visualization tools, you make your choices and continue onwards. Once back in your residence you decide to evaluate your recent selections. Using your tablet computing device and available scanning tool, you scan your receipt and upload it to the community repository. Noticing that a few of your selections are not listed in the repository, you submit the items as you feel other consumers may also benefit knowing about your selected items. Once complete, you are able to *score* your shopping experience, rating selections and visualizing potential alternatives if applicable. As well, you are able to gather recipe ideas for items purchased. Finding a recipe among the many displayed you begin preparing selected items for cooking.

The above scenario describes a situation where consumers, local or otherwise, support each other in their shopping tasks. In today's consumer-oriented society, having support such as that described may greatly aid in our abilities to make *better* product choices. By designing such a community, one that is built and maintained by consumers for consumers, we provide a unique platform for learning and knowledge sharing where otherwise consumers would be left on their own. Similar collaborative tools exist in other contexts, for example Wikipedia, where millions of users from all around the globe connect voluntarily to develop an online repository of information and knowledge about *everything*, democratizing knowledge, making it available and accessible to all [Hoisl et al., 2007; Davenport, 2007; Wohner and Peters, 2009]. These kinds of *crowdsourcing* [Huberman, 2008] activities and models of interaction design have increasingly become more popular and relevant in current society.

1.1 Democratizing Food Knowledge Through Online Collaboration

Food, specifically what constitutes *good food*, has been an area of consumer interest of late. From eating more healthy to fostering a better relationship with our food, current consumer attitudes towards developing a more well-rounded understanding of our food choices has begun to increase [Eertmans et al., 2005]. However, there remains a mystique around what truly constitutes *good* food choices. Information is vast and deciphering quality knowledge from the quantity has become a difficult and complex task [Eertmans et al., 2005]. Michael Pollan [Pollan, 2008], a highly respected author on the subject, states that although the activity appears difficult and complex, it is, however, intrinsically simple:

> *Eat food, not too much, mostly plants.*

One might read Pollan's above quotation and think, *sure, sounds easy enough!* However, there is still complexity surrounding the activity of choosing *good* food, specifically in terms of our everyday experiences while shopping in local markets filled with overly processed choices as well as supposedly *good* food choices in disguise.

For example, one may purchase a tomato, which by Pollan's advice could be considered a *good food item*. However, there could be other informational qualities of the tomato that is also critical to the concept of what could constitute a *good* tomato. These informational qualities could include whether or not pesticides were used on the tomato crop, or if any kind of chemical or dye was used to make the appearance of the tomato more pleasing or to give it a longer shelf life, among others. The activity of choosing *good* food now becomes much more complex indeed. Thus, the question of how we can be successful in finding *quality* food, *good food* with which we can get

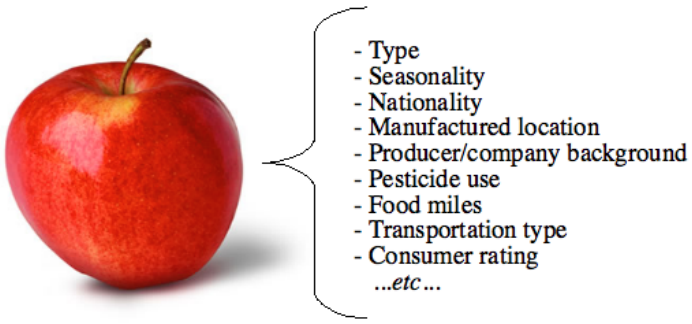

Figure 1: Illustration of a potential apple *spime*.

excited about and which ensures the vitality of our health, environment, and social well-being is yet to be addressed in its entirety.

We believe that to be successful in such respects, community support is needed. Pollan's book: *Food Rules* [Pollan; 2009], which provides an excellent guide on the subject, is a testament to this very fact as many of the *food rules* he describes were developed by modern everyday consumers and derived from lore passed down through generations. Pollan provides an excellent starting point to begin constructing a framework for designing support. The research described here builds from what he has initiated by describing an online model of *social shopping* [Kim et al. 2009; Grange and Benbasat, 2010] that deals specifically with food. What we propose is a model for designing social shopping systems that will allow for *satisfying* consumer interactions [Rosson and Carroll, 2002] by enabling consumers to voluntarily participate and become more engaged in the democratization of food *spimes*.

2 Social Shopping Using Food *Spimes*

2.1 Food *Spimes*

Bruce Sterling [Sterling, 2005] describes the concept of *spimes* as:

> *Manufactured objects whose informational support is so overwhelmingly extensive and rich that they are regarded as material instantiations of an immaterial system.*

Adapting this concept to food, we consider an apple, which would reside in the subset of *good* food items according to Pollan's *food rules*. An apple spime could include: health-related qualities (in comparison with other apples, fruit, or products), type (gala, spartan, etc.), seasonality, where it was produced and processed (locally or otherwise) or manufactured (canned, juice), price (and location of the market with the most effective price), among others (see Figure 1). Furthermore, an apple *spime* could include knowledge on how to eat the apple; how to prepare it in recipes,

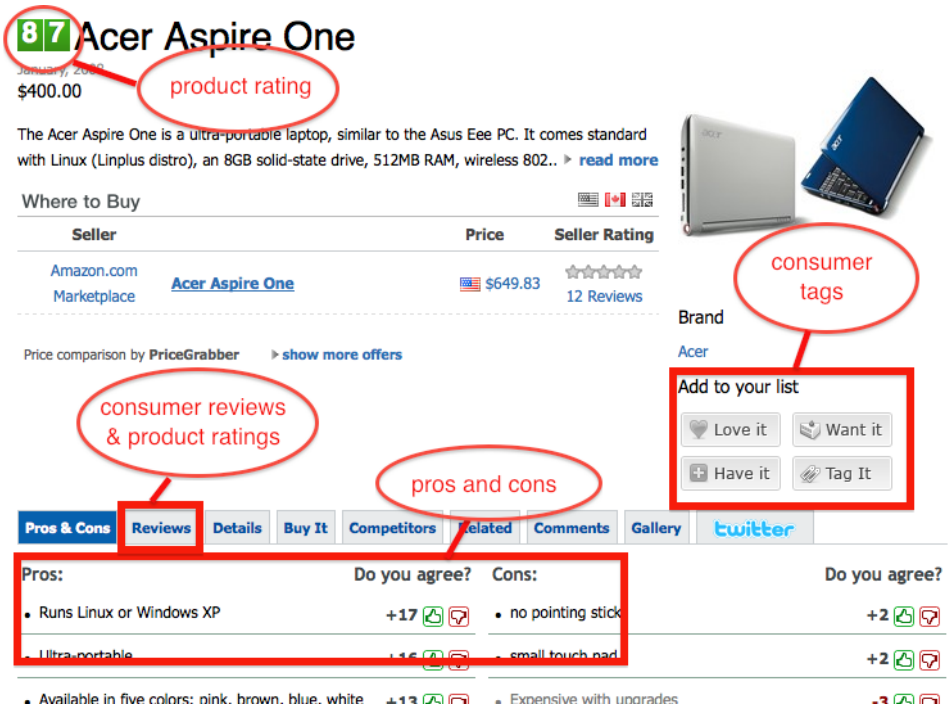

Figure 2: Illustration of ProductWiki. Consumers can rate products, contributing to the average consumer product rating (upper left), provide consumer defined product pros/cons (and collectively rate the pros/cons accordingly), tag products for future purchase, as well as contribute to consumer product reviews.

which would be highly beneficial to consumers as simply purchasing *good apples* is not enough, we must know what to do with them.

2.2 Social Shopping Tools and Food Spimes

Research into social shopping systems has been gaining interest through recent years [Leitner and Grechenig 2009; Kang and Park, 2009; Kim et al., 2009; Grange and Benbasat, 2010]. Popular examples of social shopping communities include *Gas Buddy* (`http://gasbuddy.com/`), where online consumers meet to discuss current regional gas prices, *Kaboodle* (`http://www.kaboodle.com/`), where online consumers connect to shop, share, and recommend products of all kinds, and ProductWiki (`http://www.productwiki.com/`), similar to Kaboodle, where consumers can rate, review, and recommend products accordingly, among many others (See Figure 2 for a screen capture of ProductWiki). All of these systems engage consumers in sharing their experiences, democratizing consumer knowledge and providing added support for our shopping activities and goals.

For the research described here, we are most interested in constructing social shopping models that enable consumer interaction with food *spimes*. For this task we look at how social shopping systems could provide consumers with the needed support to conduct their own food *spime* research. Contributed food *spimes* would have a degree of accuracy, transparency, applicability, and

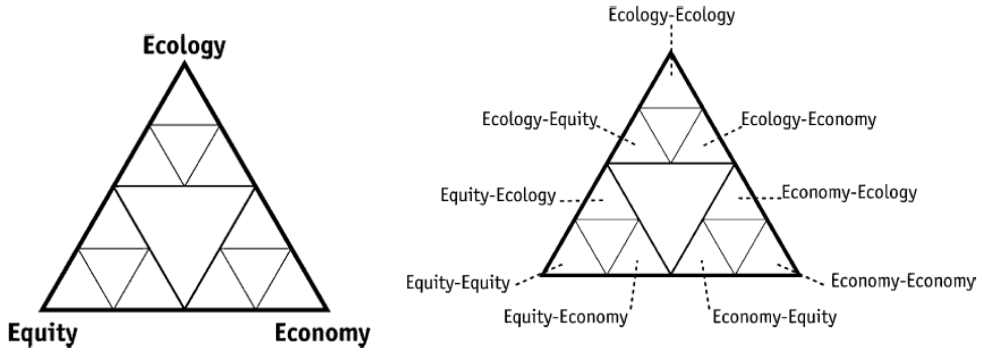

Figure 3: Model of the triple top line design according to McDonough and Braungart. All three sub-fractals, i.e. Ecology (environment), Equity, and Economy, when equal in benefit lead to optimal sustainability (centre of the fractal).

quality as they would be based on actual consumer knowledge and experiences, not solely made up of what is made available by producers, e.g. usually just being nutritional information provided on food labels. With some moderation to ensure reliability and quality of the food *spimes* [Dalip et al., 2009], the consumer benefits of such a community could be substantial.

3 Food Spimes from the Triple Top Line

With respect towards a framework for design, we were inspired from the model of the triple top line, as described by [McDonough and Braungart, 2002] (illustrated in Figure 3).

Triple top line design considers the informational quality of an item from three primary dimensions: environmental sustainability, social equity, and economic benefit. Adapting the triple top line to the visualization of food *spimes*, we can observe food products in relation to the three dimensions of the model (Figure 4). Considering again the example of an apple *spime*, when seen from the perspective of triple top line, some of the apple's *spime* could include:

1. **Ecology:** *food miles*, the distance the apple travelled from the producer (factory or farm) to the consumer's residence
2. **Economic:** *price*, related to the cost of producing, purchasing, and consuming the apple
3. **Social Equity:** *producer background, labour treatment, fair trade*, such as whether the apple was produced by a local farmer or imported from a large-scale manufacturing facility and the producers compensation for production

3.1 Designing a Model for Interaction

Figure 5 illustrates our proposed model of design. We envision a *cloud-based* model, enabling very high connectivity options for user interaction. Whether consumers are in their local grocery market browsing food selections and wanting to compare alternatives, or in the comfort of their

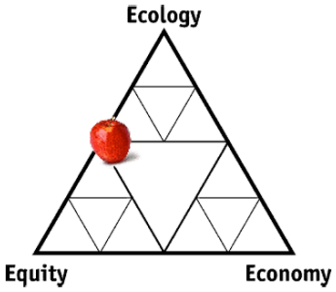

Figure 4: Visualizing an apple from the perspective of the triple top line. We observe that this particular apple falls at the centre point of ecology and equity and is furthest from economy. This may suggest that the apple might have a higher price of production or consumption, but its environmental and social equity-related qualities are more equal, i.e. it may be an organic apple produced by a local farmer of a small farm (minimal production and market impact/applicability).

residences and wanting to engage in writing product ratings or contributing to product information, they'll be able to so through all available mediums of interaction.

We envision the system to enable consumers to scan their shopping receipts using open source optical character recognition (OCR) software, picking and choosing the products on their receipt that they wish to contribute to the repository. It is important to make note that we acknowledge privacy issues attached to such an activity and plan to incorporate a design that enables consumers to have the option to select which products on their receipt they wish to contribute. After products are selected for entry, product data already entered into the food *spime* repository will be immediately seen, providing an option for consumers to add or modify contributions accordingly, contributing to the growth and maintenance of the food *spime* repository.

With respect to maintenance and moderation, initially a select number of individuals will be responsible for ensuring the integrity of the contributed food *spimes*. Over time, we envision that a *verified trusted* community member designation will be established that will allow additional community members to obtain moderation status/ability. This is envisioned to add to aspects of community information and knowledge ownership, further enabling the democratization of food *spimes*. This feature will create an environment that will best engage community members to contribute and share information, knowledge, and experiences while also ensuring a high degree of transparency, food information/knowledge quality, and trust.

In addition to OCR scanning capability/functionality, we envision consumers to have the ability to use their mobile/tablet device to digitally capture product serial codes or labels for entry and interaction with the food *spime* repository in a similar fashion. Over time we also envision the development of a food *spime* item tag which would provide another visual indicator of *quality* as well as provide an additional method to scan, capture, and interact with food *spimes* accordingly.

Visualization of the food *spimes* will initially be framed around the three dimensions of the triple top line using highly interactive displays (developed individually for each type of device based on the capabilities and functionalities possible, i.e. tablet devices have smaller screens and may have touch screen capability not present in a desktop environment - interfaces will be designed to support such aspects of interaction). Options to add and incorporate additional dimensions will

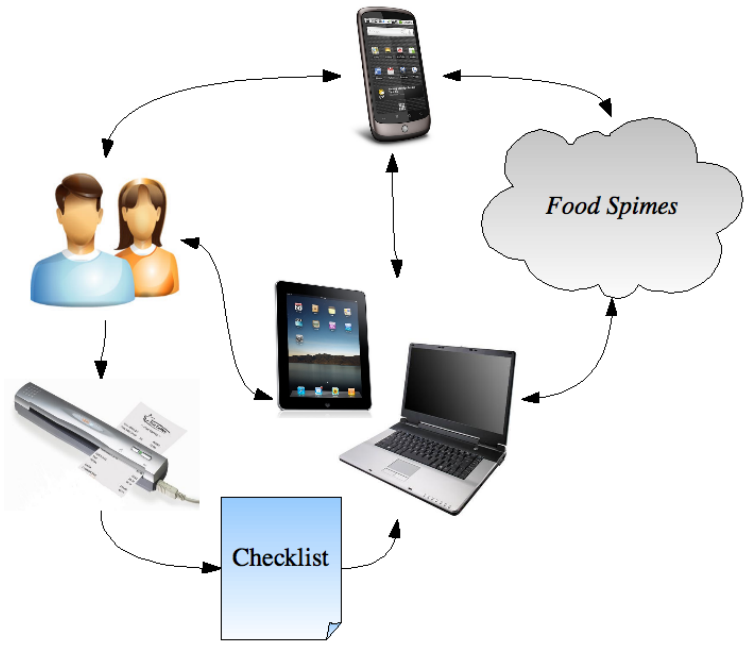

Figure 5: Proposed model of design. Consumers can interact with other consumers (online and offline) and collaborate in defining and developing food *spimes* using their preferred, or available mode of interaction.

be integrated into the design of the model to account for other dimensions of consumer interest as the community and repository grows. Some of these other dimensions may not fall directly within those of the triple top line. For example, some community members may wish to explore and interact with the *psychological* factors of their food choices, i.e. brand context, image, perception, etc., [Bell and Marshall, 2003]. Thus, as the system develops incrementally the visualization and interaction space will become more rich in context, aligning the tool to community needs and preferences while enhancing aspects of design to further aid in our evolving decision-making tasks and processes.

4 Conclusion

This paper discussed research in designing online collaborative systems for visualizing food *spimes*. Specific to our research is the concept of *social shopping* and *spimes* and how they relate to the visualization of consumer food selections; how we can select and discuss *good* food and contribute our experiences accordingly. Although selecting *good* food may be as simple as Michael Pollan suggests, *Eat food, not too much, mostly plants*, the fact remains that we do need support in order to keep engaged as the problem tends to be more complex. We believe that by constructing open, collaboratively constructed online communities for social shopping activities in such regards, we enable consumers to become more knowledgeable through their interactions with others. Thus, we envision our model to *democratize food knowledge*, enabling us to potentially make more healthy, environmentally friendly, and socially acceptable food selections based on our collaboration and participatory online interactions with others.

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