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SOURCE Citation

MacRae, R., Szabo, M., Anderson, K., Loudon, F., & Trillo, S. (2012). Empowering the citizen-consumer: Re-regulating consumer information to support the transition to sustainable and health promoting food systems in Canada. *Sustainability*, 4(9), 2146-2175. doi:10.3390/su4092146



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Article

Empowering the Citizen-Consumer: Re-Regulating Consumer Information to Support the Transition to Sustainable and Health Promoting Food Systems in Canada

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Received: 22 June 2012; in revised form: 17 July 2012 / Accepted: 31 August 2012 /

Published: 11 September 2012

Abstract: Both health and sustainability are stated public policy objectives in Canada, but food information rules and practices may not be optimal to support their achievement. In the absence of a stated consensus on the purposes of public information about food, the information provided is frequently determined by the marketers of product. No institution or agency has responsibility for determining the overall coherence of consumer food messages relative to these broader social goals of health and sustainability. Individual firms provide information that shows their products to best advantage, which may contradict what is provided about the product by another firm or government agency. Individual consumers do not have the resources to determine easily the completeness of any firm's messages, particularly in light of the size of food industry advertising budgets. Government rules confound this problem because there is also little coherence between the parts of government that have responsibility for point of purchase, advertising rules, and labelling. The healthy eating messages of health departments are often competing with contradictory messages permitted by the regulatory framework of other arms of government. Investments in programs that successfully promote environmental stewardship in agriculture are undercut in the market because consumers cannot support

those efforts with their dollars. This problem exists despite the emergence of “citizen-consumers” who have a broader approach to food purchasing than individual maximization. Only recently have some health professionals and sustainable agriculture proponents turned their attention to these factors and designed interventions that take them into account. In this paper, which builds upon earlier work by MacRae [1], we outline key short, medium and long term initiatives to facilitate the citizen-consumer phenomenon and better support consumers in their efforts to promote health and sustainability in the Canadian food system.

Keywords: citizen-consumers; food information; health promotion; sustainable food systems

1. Introduction

Both health and sustainability are stated public policy objectives, but Canada’s food information rules and practices may not be optimal to support their achievement. Lacking a joined up national food policy [2], and thus clear purpose for public information about food, the information presented is frequently left to the marketers of product. No one has responsibility for determining the overall coherence of consumer food messages with these stated policy objectives. Individual firms provide information that shows their products to best advantage. As a result, consumers receive information that is incomplete, and which may contradict the information provided by another firm or government agency. Individual consumers do not have the resources to determine with any ease the accuracy or completeness of any firm’s messages, particularly when faced with the size of food industry advertising budgets. Equally problematic, the national government has recently decided it will “no longer verify nutrition claims on food labels, and will instead set up a website where consumers can take their concerns directly to food producers” [3]. Partly in response to these information and monitoring gaps, for some time now third parties have been filling the consumer food information void, providing endorsements and health and eco-labels that can affect consumer purchasing behaviour.

Government rules confound this problem because there is limited coherence between the parts and levels of government that have responsibility for advertising rules, labelling and grading systems. The healthy eating messages of health departments are often competing with contradictory messages permitted by the regulatory framework of other arms of government. Investments in programs that successfully promote environmental stewardship in agriculture are undercut in the market because consumer information rules do not permit consumers to identify many of these products and support those stewardship efforts with their purchases and eating.

It has been known for some time that diet is a significant risk factor in at least 60% of diseases [4]. Many chronic diseases and conditions, including cardiovascular disease, hypertension and stress, cancer, diabetes, low birth weight infants (and its associated problems), anaemia, and some infections in children now pose major public health challenges. All of these chronic diseases and conditions are related to nutrition. They affect both the food-rich (those with sufficient income to acquire whatever

foods they desire) and the food-poor (those experiencing food insecurity). Very significant percentages of the Canadian population are at risk of these diseases because they do not eat in a manner optimal for health. Of course, healthy eating is a complex undertaking, but information about food is certainly a significant factor.

Canadians collectively pay, through publicly-funded health insurance, for the costs of individuals' food choices or hunger. The food system has limited responsibility for the social consequences of consumption of its products. The efforts of ministries of health to promote healthy eating are frequently compromised by agribusiness expenditures encouraging unhealthy eating patterns.

Equally, food firms bear little responsibility for the negative environmental impacts of their products. Canada faces significant environmental challenges related to greenhouse gas emissions, energy inefficiencies, nitrogen and phosphorous contamination of waterways, biodiversity losses, and excessive food waste [5,6]. It lags behind most OECD countries in agri-environmental performance [7]. In the industrial world, most of these environmental costs are externalized, absorbed in the environment or remediated by the state, using taxpayer money [8].

Confronted with a myriad of food system problems, governments are failing on many fronts related to health promotion and sustainability, including changing food information rules to enlist eaters in a public effort to create change. This hands-off approach to consumer information is particularly problematic against the backdrop of a growing movement of "citizen-consumers", eaters who bring a set of values to their shopping and eating decisions that go beyond individual concerns.

Other countries have recognized this problem and taken actions to solve it, Norway and the Netherlands representing two contrasting approaches. In the 1970s, Norway aligned food production and nutrition information with their nutrition policy objectives, to motivate better dietary habits and to develop skills for making more informed food choices. The government recognized that "present marketing practices are in relatively large disaccord with the nutritional objectives. The factors which today regulate sales are only to a small degree dictated by nutritional considerations" [9]. Following a different strategy, because they were unwilling to extensively regulate environmental changes in the agricultural sector, the Dutch government has actively facilitated eco-label programming by NGOs, farm associations and firms to allow consumers to be better informed about the sustainability attributes of food products. Whether this is the most effective approach is subject to some debate [10], but it highlights how environmental information can potentially drive supply chain changes with well designed and profound programming.

The challenge is to redesign consumer information systems so that they help governments achieve their national nutritional, health and environmental objectives for the population. But given shifts underway that reduce state authority over the food system, limited mechanisms of governance, and reduced use of potentially effective policy instruments [11], the limited approaches of earlier periods must be modified. We explore the possibilities for change in this paper, focusing particularly on information conveyed in the supermarket, where most Canadians acquire the bulk of their food for consumption in the home.

2. The Shifting Terrain of Food Information Regulation

According to classical market theory, consumers are presumed to be acting rationally when they make purchases, acting in their self-interest with full awareness. In order to act rationally, they need all the relevant information. Having all the relevant information allows the market to send clear signals to buyers and sellers.

When considering consumer food information needs, regulators have focussed primarily on price, quality and convenience. These parameters have been fairly narrowly defined. For example, food quality has been defined primarily by the safety of the product and, particularly with fresh foods, its cosmetic appearance. Convenience is about the speed and simplicity of preparation.

For their part, the majority of food firms are largely silent on the social, environmental and health impacts of food production, processing and distribution. For example, how a product's nutritional profile might have been affected by agricultural, storage and distribution practices has not traditionally been seen as relevant to consumers. According to market theory, this absence of full information helps to create a dysfunctional food marketplace in which partial and contradictory signals are sent to both producers and consumers. In turn, these distorted signals mean that resources in the food system are improperly allocated, particularly, those that help to ensure health, environmental sustainability and equitable access.

A traditional positive role of government is to shape, monitor and correct deficiencies in the marketplace. Regulation is one of several tools used by government to carry out this role. In particular, regulation serves to influence the actions of market players, define products and processes, determine what is allowed in the market under what conditions, and provide penalties for non-compliance.

However, policy makers have failed to implement strategies based on how more fully informed consumers can help achieve public policy objectives (e.g., improved health and sustainability). The policy tradition is to manage food supply, rather than actively managing demand [2]. The traditional market view is that prices convey accurate and sufficient information on costs and value that permit consumers to act rationally. In reality, the very conditions required to convey accurate information do not normally exist in modern markets [12]. Economists have long recognized that information asymmetry is a chronic problem in food markets, related to issues of limited competition, the absence of accurate prices and incomplete state regulation. Many have devised theory to explain firm and consumer behaviour in asymmetrical environments. Unfortunately, while this evolving theory explains behaviour, it has not advanced policy changes in Canada that have substantially improved the consumer information environment. While asymmetric information is the norm, the regulatory system does not fully recognize this, neither by regulating to fully correct asymmetry nor by actually normalizing it in regulatory approaches.

As well, this approach to regulation assumes that businesses have no broader social obligations, aside from those related to food safety and product promotion regulations. Yet historically, those obligations arose from public demand for regulation. Health and environmental concerns can be viewed as a contemporary equivalent.

Given this narrow view of business obligations, it is unlikely that many food firms will provide, without state oversight, the information that consumers require to make informed decisions. In 1998 interviews conducted for the TFPC (Toronto Food Policy Council) [1], food marketers stated

that they had the interests of consumers at heart. It seems though that most marketers were caught up with achieving sales and brand share targets, keeping within budget and satisfying the demands of more senior management. Most marketers had not spent many hours critically thinking about what it really means to satisfy consumer needs. In fact, many of those interviewed were not familiar at that time with issues of increasing concern to many consumers, including gene manipulation, antibiotic and hormone usage, pesticides, and farm worker rights. It seems, then, that there was a gap between intention and practice. Also, interviewees indicated they were not really willing to pay for consumer education. Particularly with regard to nutritional and environmental concerns, they hoped that the media and government would do most of that work for them.

Ultimately, though, it is the marketers who determine which products consumers have to choose from, and, within existing guidelines, what information about them is conveyed in packaging and labeling. If there is no obvious advantage (as measured through potential increased brand sales and brand market share) to providing the information, then there is no incentive to do something that could ultimately mean increased product costs and lower profits. The degree of incentive changes if a competitor changes tactics and provides different information to consumers. Then a marketer may react to keep the playing field level.

So a contradiction emerges. Business may want informed consumers if it suits their marketing approach, but is not sufficiently informed and motivated to provide them information around broader social objectives. As well, firms have known for some time that consumers are confused about the information provided [1]. But in the absence of clear information, consumers may not be able to articulate what they want. In many cases, not enough consumers are vocalizing concerns in a manner that reaches and resonates with food marketers. Hence, marketers may not react in any significant way with new products or product modifications. All in all, vocalized consumer needs/demands that allow managers to meet product target profit margins with products differentiated from those of the competition drive much of what marketers do regarding the products they market.

There has, however, been an explosion of third party health and environmental organizations involved in consumer information provision, in part because government and business approaches are viewed as inadequate. According to Busch [13]:

To be sure the role of the State has changed and perhaps diminished. Nation-states are now far less likely to regulate directly and far more likely to delegate regulatory authority to other organizations. Moreover, the opening of the world economy has restricted the ability of nation-states to intervene in markets without significant and often negative consequences.

From organizations involved in disease prevention, to food production certifiers, these organizations have evolved what are often called private systems of regulation. These organizations are typically non-governmental, or represent associations of businesses. Such approaches allow farmers and firms to create a niche for themselves in food markets, and to ensure the authenticity of their claims, many producers and processors are going to third party certifiers that require changes in production, including low chemical use, the humane treatment of animals, preservation of biodiversity and wildlife, and just labour practices.

Howard and Allen ([14], p. 439) claim that these third party eco-labels serve “three primary functions”:

- “They provide consumers with information about product characteristics that are not immediately apparent or verifiable by consumers themselves”.
- They may be a possible instrument “for implementing public policy objectives, such as reducing the use of pesticides”.
- They are able to “increase producer revenues, either through facilitating a price premium for growers or by providing a market niche for increased sales”.

There are some efforts to reconcile state intervention with these new private regulatory initiatives. Sometimes referred to as regulatory reconfiguration [15], such new governance regimes embrace a wide range of coordinated and integrated instruments (including some traditional command and control regulations), well matched to the desired effect, and implemented by an equally wide range of state and non-state actors to have the best chance of success in the long run. The proposals that follow are rooted in such an approach.

3. A Brief Overview of the Existing Regulatory System

In the Canadian system, responsibilities for consumer information are divided amongst different acts, levels of government, and different units within government departments [16]. The most important pieces of federal legislation are the Food and Drugs Act and Regulations (FDA), and the Consumer Packaging and Labelling Act and Regulations (CPLA). Other legislation, including the Canadian Agricultural Products Act (CAPA), the Meat Inspection Act (MIA), the Fish Inspection Act (FIA), are also relevant in some cases. In addition, the federal Broadcasting Act and Regulations have an influence over food commercial messages. This act is the responsibility of the Canadian Radio-television and Telecommunications Commission (CRTC), with regard to the application of regulations and policy rulings. Other pieces of legislation with limited, but sometimes important, bearing on food include the Competition Act and the Trade-marks Act, administered by Industry Canada. In many provinces, there are also provincial rules pertaining to food labeling (e.g., in Ontario, the Farm Products Grades and Sales Act, *Regulation 387*). The Ontario government is also involved in grading, meat inspection, nutrition and food safety matters. Municipalities in many provinces have some responsibility for implementing provincial legislation regarding nutrition and food safety programs, as they relate to public health, and consequently have some consumer information duties.

The Canadian Food Inspection Agency (CFIA) and Health Canada (HC) share responsibility for regulating food labeling, based on the authorities provided primarily by the *Food and Drugs Act* (FDA) and *Consumer Packaging and Labeling Act* (CPLA). Health Canada sets food labeling policies dealing with health and safety matters and CFIA is responsible for non-health and safety food labeling regulations and policies, as well as investigating complaints, encouraging compliance and consumer protection.

Regarding the development of food labeling regulations, the prime concern for CFIA is that no information materials be “false”, “misleading” or “deceptive” as stated in the Canadian Food Labeling

Regulations. This situation exists because food safety legislation in Canada has been built on an anti-adulteration platform [17,18].

According to the CFIA, a label “serves three primary functions”: “to provide basic product information”; to provide “health, safety and nutrition information”; and to provide a “vehicle for food marketing, promotion, and advertising” [16]. The policies pertaining to food labeling and packaging, are developed in order to:

- “Protect health and safety.
- Prevent product misrepresentation and fraud.
- Promote an informed food choice, by providing consumers with reliable and comparable information that reflects current food technology and nutrition recommendations and that can be easily understood.
- Support marketplace equity and fair competition.
- Respect obligations under international and federal provincial trade agreements.
- Do not entail costs of implementation that outweigh benefits to society”.

Given the complexity of the current system, the jurisdictional divisions, and the gaps in coverage, the question remains whether the current regulatory environment does promote informed food choice, especially with the emergence of a broader range of consumer concerns. We next address this emerging phenomenon of the citizen-consumer.

4. The Citizen-Consumer: A New Framework for Consumer Information Systems

Historically, attention has focussed on perceived consumer concerns about food price, quality (usually defined by cosmetic appearance), convenience and safety. Now there is increasing evidence that consumer interests are more diverse and complex, challenging the traditional way in which companies have both informed consumers and merchandised food products.

For years, the food industry has publicly explained its behaviour in the marketplace by claiming it was responding to what consumers wanted. Mass produced and inexpensive food, convenience, packaging and extensive product variety have been explained as responses to market signals. Surveys of consumer attitudes have historically reinforced this view [1].

But the consumer marketplace is less homogeneous than earlier times. Consumers have been rebelling against mass produced foods for some time. Smart processors and retailers have diversified their product offerings, in the hope of capturing these new market segments. To do so, they have changed promotional strategies, and have invested in sophisticated market survey instruments. Some consumers, once offered new kinds of choices, have responded and changed their purchasing patterns. All these developments confirm the interactive and dynamic interconnections between product availability, consumer information and desires. It is increasingly clear that consumer demand is a product of individual and collective wants and needs, access and availability, and the type and manner of information provided.

Welsh and MacRae [19] suggested that if the population is to be engaged in food buying that supports sustainability and food security, and not just traditional conceptions of price, quality, convenience and safety, then the concept of ‘consumer’ is far too limited because it focuses primarily

on the ability to buy (or reject) products and services. In contrast, the language of ‘citizen’ implies membership in a society, with both rights and responsibilities beyond those of consuming goods and services. Similarly, society is more than simply a marketplace.

It may now be that many consumers are moving into what Gabriel and Lang [20] have called the fourth wave of consumer activism. In their analysis, they separate the emergence of consumer movements into four waves. The first wave of co-operative consumers was sparked by the Co-operative Movement, which began in England in 1844 and which was based on the principle of self-help by the people without any distinctions between consumers and producers ([20], p. 41). The second wave consists of the ‘value for money’ movement, which came into its own during the 1930s in the United States ([20], p. 44). Consumer activists in the second wave were concerned about “the threat posed to consumers by increasing concentration and monopoly capital” and their aim was to “make the marketplace more efficient and to champion the interests of the consumer within it” through education and advocacy efforts ([20], pp. 44–45). The third wave, Naderism, also emerged in the United States. This movement originated with the publication of American lawyer, author and activist Ralph Nader’s 1965 exposé of the American car industry, *Unsafe at Any Speed*. Gabriel and Lang argue that Naderism “brought a new punch to consumer politics” by tapping “a deep well of public unease about the power of large corporations vis-à-vis the individual customer” ([20], p. 47). Naderism places a lot of emphasis on debunking misinformation from large corporations and demanding that the state protect its citizens. The fourth wave of consumer activism consists of what Gabriel and Lang [20] term alternative consumerism, what others have called ethical consumerism [21] and what Micheletti [22] refers to as political consumerism. Political consumerism emerged in the 1970s and gained coherence as a movement in the 1990s [20]. The emergence of political consumerism coincides with the rise of the environmental movement in North America and Europe and one of the first streams of alternative consumerism was the green consumer movement which advocated for reduced consumption and/or the consumption of products that were more environmentally friendly. Gabriel and Lang [20] note that by the early twenty-first century, the green consumer movement had gone mainstream, and the reformist stream of green consumerism (which advocated consuming not less, but differently) had spawned a whole new category of green products and businesses.

A prominent feature of this fourth wave is what Micheletti [22] calls boycotting, a form of ‘positive political consumerism’ that involves buying particular goods and brand names over others based on claims made about the product. Boycotting is in contrast to ‘negative political consumerism’, or boycotting, which involves *refusing* to buy specific products or brand names. Boycotting is generally dependent on labeling schemes set up by governmental or extra-governmental regulating bodies. Labeling schemes are important because they legitimize and govern the claims made about products marketed to political consumers. For consumers interested in the politics of products, labeling schemes help them to identify products that are (or at least claim to be) in line with their political values and concerns.

Out of these dynamics emerges the concept of the citizen-consumer [22–24], those actors who “combine the public role of citizens with the private role of consumers” ([22], p. 16). Unlike consumers whose motivations are based on purely private concerns, citizen-consumers are motivated (at least in part) by public concerns related to their identity as citizens.

Arguments regarding the effectiveness and viability of political consumerism are generally based on the concept of consumer sovereignty, which Dixon and Carsky define as “the power of consumers to determine, from among the offerings of producers of goods and services, what goods and services are and will be offered (produced) and/or created in the economic sphere of society” ([25], p. 29). Although the concept of consumer sovereignty is not new, dating back at least as far as Adam Smith, contemporary forms of ‘voting with your dollar’ rose to prominence in the late twentieth century alongside neo-liberal governance models that “actively promoted the idea of consumer choice in the market as a worthy complement to, and even substitute for the citizenship ideal of democratic participation” ([23], p. 246). Although contentious and with only piecemeal empirical data on the effectiveness of political consumerism [26], some of the contemporary advocates of political consumerism borrow from the logic of trickle-down economics [27] to argue that, in theory, the more people shop for products labeled as more ecologically friendly or socially just, the greater will be the market share of these products, and in turn, the more these products will be available and affordable to the general population [28].

However, Jacobsen and Dulstrud [29] found that consumers do not often have enough information about the politics beyond products to make informed political consumerist choices. This is the jumping off point for the rest of our analysis. How must consumer food information systems be redesigned to leverage the citizen-consumer phenomenon and advance government objectives around health and sustainability? Given that health and sustainability are collective good objectives, we follow Johnston’s interpretation that draws a clear distinction between consumerism’s “maximization of individual self-interest through commodity choice,” and citizenship based on the prioritization of “the collective good,” which “emphasizes responsibility to ensure the survival and wellbeing of others—human and non-human” ([29], p. 243). This is an important distinction because a significant assumption of the current system is that individual self-optimization generates wider societal value. While some actions may benefit both the individual and society [30], the view expressed here is that the state must facilitate collective good undertakings and must shape how individuals behave to achieve public objectives. Individual self-optimization is not sufficient to create the necessary aggregate effects. This is admittedly a challenging proposition for the state because the industrial and neo-liberal values that currently dominate food production and manufacturing have for some time been supported by state legislation, regulation and programming [31,32]. We highlight below certain health and environmental aspects of the consumer information system that could be modified in the current environment to allow this wider citizen-consumer notion of choice and societal value to be expressed.

A caveat—we recognize that improving information is only one of many changes to create a more sustainable and health promoting food system. Ultimately, our proposals will only be truly effective when integrated with other measures, as elaborated in a joined up food policy approach by MacRae [2]. Consistent with a joined up approach, we focus later on integrated solutions.

5. Shifting Regulation to Leverage the Citizen-Consumer Phenomenon

5.1. Evolutionary Change

Our objective is to identify changes to information systems that actively support healthy and sustainable food choices, as part of a programme of system change. Although as a society we understand reasonably well the kind of diet that will help produce a healthy population and sustainable food systems, governments and professionals have largely failed to provide the structures and resources to ensure that it happens. They have, instead, largely relied on an increasingly discredited approach to creating health and sustainability-individual behavioural change-without addressing significantly the deeper structural forces contributing to less desirable behaviours.

Given the current low level of support for significant change to consumer information systems in Canada, the transition will have to be a slow, evolutionary process requiring action by many different advocates, both within and outside of these systems. For this paper, key government documents were analyzed, and from these, we identified potential solutions, some currently in effect, others proposed, using an efficiency, substitution, redesign transition framework [33], key conceptual frames in health promotion [34], agroecology [35,36] and emerging ideas on regulatory pluralism [11].

The transition framework serves as both a guide to action, and an indicator of progress. Stage 1 strategies involve making minor changes to existing practices to help create an environment somewhat more conducive to the desired change. The changes would generally fit within current consumer information activities, and would be the fastest to implement. For example, changing the visual presentation on a packaging label would make existing information more accessible to many consumers. Second stage strategies focus on the replacement of one practice, characteristic or process by another, or the development of a parallel practice or process in opposition to one identified as inadequate. For example, a new system of providing nutrient value information on a food packaging label would replace what is currently provided. Finally, third stage strategies are based on the principles of healthy public policy, agroecology and the values of citizen-consumerism. These strategies are more joined up, take longer to implement and demand fundamental changes in the use of human and physical resources. This final, or redesign stage, is unlikely to be achieved, however, until the first two stages have been attempted. Ideally, strategies should be selected from the first 2 stages for their ability to inform analysts about redesign (the most underdeveloped stage at this point) and to contribute toward a smooth evolution to the redesign stage.

In the next few sections, we identify strategies to move us in this new direction, starting from the current dominant regulatory instruments for informing consumers: definitions of food terms, product labels, Point of Purchase (POP) information, and television advertising. Clearly, other consumer education vehicles are available and promoted, but these have not historically been regulated as significantly by the state, so we leave them for another discussion. As well, traditional instruments related to information do not represent the most profound interventions that the state can muster [37], but in the current political environment, it is unlikely that Canadian governments will engage in more direct and forceful regulatory action. Our focus is on currently regulated measures that could advance population health and sustainability in the food system. Our presumption is that the state will need to proactively intervene, sometimes with the help of other policy actors, to create regulatory change to

optimise the value of the emerging “citizen-consumer” phenomenon. This is admittedly challenging, as the state does not typically respond to emerging phenomena in this way. A more common response is to wait until a significant mass of consumers (and some NGOs and businesses) are demanding changes before moving incrementally towards these demands. The proposals that follow are not a comprehensive set of required changes, but provide a flavour, within a transition framework, of the kinds of initiatives we believe can take advantage of the citizen-consumer phenomenon to drive change.

5.2. Promoting Health

The efficiency and substitution stage strategies involve modifying existing instruments. The redesign strategy is to create an integrated and simple system providing more complete decision making information.

5.2.1. Modifying Product Labels, Shelf Talkers and Advertising

5.2.1.1. Product Labels

As discussed earlier, the citizen consumer concept is predicated on the idea that eaters have purposes beyond self-maximizing consumption. Canada’s consumer information system has historically been rooted in fraud prevention and the assumption that self-maximizing information makes markets work efficiently. Capitalist markets presume that individual self-maximizing behaviour is also optimal for social welfare; however, as discussed earlier, this is not always the case in food markets. But self-maximizing behaviour can have larger public benefits. Individuals closely following nutrition labels may improve their health, reduce morbidity and mortality and contribute to reductions in public health care costs. However, our interest here is more in how food information can progressively contribute more directly to public maximizing activities. We devote most of our remaining analysis to these limitations in the current system, rather than a more detailed critique of the self-maximizing challenges of current information rules.

In Canada, product labels usually provide information on the company, the name of the product, nutrition information, a list of ingredients, sometimes the product grade, its origin (and sometimes Canadian status), and occasionally (only a limited number are permitted) claims about the health value and nutrient function of the food. As discussed above, consumers rely extensively on product labels for information, but although there have been recent improvements in several of these areas, others remain suboptimal. As well, little information on the food production process and possible contaminants is provided.

There is also some evidence, as when trans fat labelling was introduced in Canada, that label information causes firms to change their formulations to generate a more positive label, and potentially better sales. Yet, such realities still appear to be insufficient to provoke more profound regulatory improvements to drive manufacturing changes.

Nutrition labels are the most direct information linking consumer health and product purchasing. Until recently, nutrition labelling was not mandatory in Canada, except in cases where a specific nutritional claim was being made. Where labelling was provided, it was often incomplete, and/or difficult for the consumer to read and interpret. Regulations introduced in 2003 made nutrition labels

mandatory in Canada for all prepackaged foods (with some exceptions) on 12 December 2007 [37]. For large manufacturers (those with more than \$1 million in sales/year) an earlier deadline was imposed: 12 December 2005 [38].

Health Canada estimated at the time that this new nutrition labeling could help save as much as \$5 billion in tax dollars over the next 20 years through a reduction in rates of diet-related diseases such as cancer, diabetes and heart disease because of dietary improvements among the population [39].

The new labels contain a Nutrition Facts Table with a standard format and which lists information on calories and 13 ingredients (fat, saturated fat, trans fat, cholesterol, sodium, carbohydrate, fibre, sugars, protein, vitamin A, vitamin C, calcium and iron) in standard units [16]. The table also lists the % Daily Value of these ingredients, which is the proportion of the daily recommended intake of the ingredients (as determined by Health Canada) that exists in the food.

The new regulations also control the nutrient content (e.g., fat free) and disease risk reduction claims (e.g., A diet rich in vegetables and fruit reduces risk of some types of cancer) and therapeutic health claims that can be made. Nutrient content claims can only be made in cases where the amount of the ingredient in question meets a regulated standard. Diet-related health claims are only allowed, with stipulations, in relation to five combinations of foods and their proven health benefits: sodium and potassium and high blood pressure; calcium and vitamin D and osteoporosis; saturated and trans fats and heart disease; fruits and vegetables and cancer; carbohydrates and dental caries [16].

The new labels are a notable improvement on the old ones. As Health Canada stated, “Prior to these regulations, nutrition labeling was optional with a few exceptions. The format of the table (the way it looked) was not consistent, and if nutrition labeling was provided, information was given on only a few nutrients. Not all nutrient content claims were regulated and the criteria for some of the existing claims did not reflect the latest science. Diet-related health claims were not allowed in Canada, before these regulations” [40].

There remain, however, some exceptions that limit the utility of the labels in certain food categories. Nutrition information is not usually provided for fresh meat, poultry, seafood, fruits and vegetables. There are exceptions in the fat and cholesterol labeling regulations which mean that not all foods are required to display their contents in a Nutrition Facts Table. Foods which are not required to display the Table include (but are not limited to) [16]:

- A variety of cow and goat milk products sold in refillable glass containers
- Raw meat and poultry (unless it's ground)
- Raw fish and seafood
- Food sold only in the retail establishment where it is prepared and processed from its ingredients
- Individual servings of foods that are sold for immediate consumption (e.g., sandwiches or ready-made salads)
- Clerk-served foods which are packaged at the time of sale (these are exempt from having *any* label at all since they are not considered “prepackaged”).

The last three exceptions are important ones since they mean that nutrition information is not available for fast foods (donuts, french fries, hamburgers), one of the greatest sources of calories, saturated and trans fats in the Canadian diet. The first three are also of concern since animal products are often high in fat.

Serving size information is confusing. Nutrition information must be based on one serving size, but a serving size is only loosely defined as “an amount of food which would reasonably be consumed at one sitting by an adult” [16]. Reference serving sizes are suggested, but frequently are not followed by manufacturers. Consequently, within a particular food category, serving sizes may vary significantly across brands, making it very difficult for consumers to compare. Furthermore, the rules are sufficiently vague to allow manufacturers to set unrealistically low serving sizes which means problematic ingredients (e.g., salt or fat) may appear to be of lower content than would be in a reasonable amount consumed during one eating event.

Ultimately, in terms of population health objectives, Canadian product regulations make it difficult for consumers to understand how to relate individual nutrient levels to overall diet requirements that optimize health. The link between, for example, nutrition labels and Canada’s Healthy Eating Guidelines is not direct except in some specific cases.

5.2.1.2. Ingredients Listings—Food Additives, Processing and Storage Products

Product ingredients have received some attention from consumers over the years, in part because of media reports about health problems associated with specific ingredients, particularly preserving agents, food dyes, flavour enhancers, and fat and sugar substitutes.

Current ingredient list rules specify that “ingredients must be listed in descending order of proportion by weight, as determined before they are combined to make the food. The exceptions are spices, seasonings and herbs (except salt), natural and artificial flavours, flavour enhancers, food additives, and vitamin and mineral nutrients and their derivatives or salts, which may be shown at the end of the ingredient list in any order” [16]. In other words, the way in which these components are listed is not consistent with other components. Unfortunately, in contrast to many other jurisdictions, Canada does not require Quantitative Ingredient Declarations (QUID).

Other exceptions of importance include:

- not all prepackaged multi-ingredient foods require an ingredient list, including those packed from bulk at retail “(exception: mixed nuts, and meat products packed by a retailer which contain phosphate salts and/or water)” [16].
- prepackaged individual portions served with meals or snacks by a restaurant or airline or servings prepared by commissaries and sold in canteens or vending machines; and prepackaged meat or poultry products or by-products barbequed, roasted or broiled on the retail premises.
- certain foods and classes of foods may be listed by class names (rather than specific names) including vegetable oil, colour, flavour and artificial flavour, spices, and milk ingredients.
- many foods when used as ingredients of other foods are exempt from a declaration of their components including many fats, sweeteners, jams and flours “unless the components belong to a determined list of allergenic ingredients (such as MSG, aspartame, peanut oil)” [16].
- certain food preparations and mixtures, including flavours and seasonings, are exempt from a declaration of most of their components.

Many of these exemptions appear to be for the convenience of the manufacturer in that they allow more readily for ingredient substitution based on price and availability considerations.

5.2.1.3. Point of Purchase

Point of Purchase (POP) materials have been used in-store for years by manufacturers for a number of purposes:

- to bring consumer attention to a new product;
- to encourage brand switching by offering a cents off coupon for purchase;
- to encourage trial of a partner product (may include a coupon);
- to promote a family of brands through a consumer contest;
- to encourage increased product purchase through coupon ad pads (often requiring multiple purchases or for next-time purchase);
- to encourage increased usage through alternative product uses (e.g., baking soda for cleaning carpets);
- to improve shelf presence in a brand category where there are many competitors;
- to promote a new product benefit.

Using POP to deliver nutrition and health messages is much more unusual. In the dominant view of POP marketing, consumers are only attentive in a store for a few seconds/item, so the message on any promotional/educational material needs to be short, with a small number of very legible words to communicate the message (e.g., ad pads). Delivering health messages is not the same as product promotion. The store is not the best place for educating, but it can be used to remind people of something, or to direct people somewhere else for more information. To be effective, the material needs to stand out from the products it will be placed beside and “grab” people as they walk by. There have been some successes in changing actual purchasing patterns dating back to the 1980s [41], with shelf labels having the following characteristics:

- bold, easy to see graphics
- writing at a grade 6/7 level
- shelf price labels with nutrient information right on it
- choose more often/choose less often categories

Retailers are unlikely to be willing to pay for such materials, given how POP has traditionally generated additional profits. Manufacturers are unlikely to pay, as health messages will not be product specific, and would likely focus more on less processed foods.

On the positive side, many retailers and manufacturers will see participation in a health program as part of being good corporate citizens. They may recognize that generic promotion of fruits, vegetables, complex carbohydrates and dairy products will be positive for store and product reputations. Well respected health organizations (Canadian Cancer Society, Canadian Heart and Stroke Foundation) have subsequently participated in third party endorsement programmes. The regulations pertaining to third party endorsements of retail food products are outlined in chapter 8.11 of CFIA’s 2003 Guide to Food Labeling and Advertising, “Third Party Endorsement, Logos and Seals of Approval”. These regulations flow from the “Policy on the Use of Third Party Endorsement, Logos and Seals of Approval, Food Division, Consumer and Corporate Affairs Canada, March 1991” and were created for organizations that provide “health and nutrition information” for a single food item or

brand, but not to “groups or classes of food” [16]. Chapter 8.11 of the Guide to Food Labeling and Advertising requires that the food label “clearly explains the reason for the appearance of the third party’s name, statement, logo, and so on” [16], applied to organizations making a health or nutrition claim. The policy was not designed for environmental claims, but could presumably be applied as long as it wasn’t confusing to consumers [42].

5.2.1.4. Advertising

Although advertising can contribute to market efficiency by providing consumers with information, it can also be part of an insidious process of misinforming or only partially informing the public [43]. Advertising promotes the feeling that happiness is associated with the purchase of goods and services. It shifts consumer focus from needs to wants by redefining basic needs as wants. It proposes consumption as a cure for anxiety and fear, and redefines serious social issues as personal problems that can be solved by buying products [44]. The costs of such misinformation have been borne by the public, directly in product prices, and indirectly in lost government tax revenues, because advertising expenses have regularly received preferential tax treatment [45]. The public and taxpayers also bear the costs of ill-health that result from consumption of many of these products. Some studies have suggested that advertising is not often cost effective, and that it contributes to waste, monopoly and higher prices [43].

Although advertising regulations exist, the focus is on preventing fraud and not on the provision of full product information. As well, Canadian regulations have been weakened over the past few decades. It used to be that food TV commercial scripts and preferably story boards had to be reviewed in advance by Industry Canada and it had the authority to request modifications and even reject TV commercials. Advertisers could not make changes without resubmitting. A recommendation for the prevention, treatment or cure of a disease or ailment would not be permitted unless approved by Health Canada [46]. In the late 1990s, responsibility shifted to the advertising industry. Advertising Standards Canada (formerly the Canadian Advertising Foundation) developed an industry Code of Ethics which states that “no commercial message containing a claim or endorsement of a food or non-alcoholic beverage to which the Food and Drugs Act and Regulations apply may be broadcast unless the script for the commercial message or endorsement has been approved by the Food and Beverage Clearance Section of Advertising Standards Canada and carries a current script clearance number.” [47] As part of this reformulation of regulatory oversight, no mandatory requirements were imposed for review of print advertising. Labels could voluntarily be submitted to the federal government for advice.

When responding to calls to restrict advertising, the advertising industry has argued that its influence is overestimated. This appears to be a disingenuous argument. If advertising is not effective in influencing people’s choices, then why would companies spend money on it? And there has been evidence at least since the 1980s that particular forms of advertising influence dietary choices, particularly among young people [48]. For example, Engelhard *et al.* suggest that “exposure to food advertisements significantly and directly affects consumption of fattening food by both children and adults” [49].

The conclusion for many is that current advertising generally runs counter to government efforts to promote healthy eating. The failure to restrict advertising, particularly to young people, means that government is ensuring the failure of its own efforts. A coherent health promotion strategy would require that government restrict the ability of the private sector to offer messages that contradict its own.

5.2.2. Efficiency Stage Changes Required

1. Remove nutrition labelling exemptions so that product or shelf labels are required for currently exempt fresh foods and for many fast food items.

2. Construct messages to link nutrition panel information to Canada's Food Guide. One such as "This food is highly nutritious but also high in fat. Suggested serving size for a healthy adult is maximum xx servings per day, the serving size being xx ounces" (amounts depending on product) would provide consumers with guidance, and, in combination with details about fat content, would offer a more comprehensive way of informing consumers about their food.

3. Rewrite certain Food and Drugs Act Regulations so that fat production and distribution is discouraged, and consistent labelling of fat content encouraged:

- a) Change all prepared meat food definitions so that the product can contain no more than 25% fat by weight.
- b) Change dairy product food definitions so that maximum fat contents are specified for each type of cheese.
- c) Change all product labelling systems so that the label contains both the grams of fat and the percentage of calories consumed as fat (consistent with Canada's Healthy Eating Guidelines)
- d) Require labelling of all fatty ingredients.
- e) Require restrictions in trans-fatty acids (TFA).

4. Canada now largely requires TFA labelling, but in Europe, the industry has made great strides in removing TFA from their processes [50], and of course, the regulatory environment regarding TFA is generally stricter than in North America and was implemented at an earlier stage. For example, the Netherlands reduced TFA content in the mid-90s, to less than 1% in most margarine. Dutch scientists projected that, as a result of this measure, TFA consumption for the average person would decline by 4 grams/day (compared to 1980s levels), and that coronary disease incidence could fall by 5% [51].

5. Remove ingredient listing exemptions and add the functions that non-nutritive ingredients play in the food product (e.g., preservative, emulsifier, *etc.*). Implement QUID (Quantitative Ingredient Declarations) on all packaged goods.

6. Continue current efforts to make serving sizes consistent and realistic and require that all packaging describes how many serving sizes are contained in the packaging unit in which the food is sold.

7. Use more shelf talkers/ad pads in supermarkets as health promotion vehicles. Ad pads can work well when used to remind consumers of a campaign that they would already be familiar with through another medium (e.g., television, direct mail or outdoor advertising), when the pads are placed next to the product of the campaign and when the message contained on the ad pad (and its "look") is consistent with that of the familiar campaign.

5.2.3. Substitution Stage Changes

1. The Science Council of Canada proposed in the 1970s that advertising of nutritionally-questionable products be curtailed by government intervention [52]. This could be one component of an integrated strategy to promote an optimal diet and eliminate or restrict any advertising that constitutes a barrier to achieving this goal. One possible requirement might be that food products that are clearly undesirable or peripheral to an optimal diet be labelled as such.

2. Another approach is to implement a comprehensive marketing ban on low/no nutrition foods. At least 50 countries now regulate television advertising aimed at children, and within Canada, Quebec banned all print and broadcast advertising to children in 1980 [49]. Even broader marketing bans may now need to be considered in the digital marketing era.

3. Require that Canada's Food Guide be placed on all packaging labels with sufficient size to accommodate it. Weston's Wonder Bread was one of the first Canadian products with such a label in the 1990s.

4. Create new systems for adding messages to labels that tell consumers how a food product complies with the government's healthy eating guidelines (e.g., "Eating this product several times a week is consistent with Canada's Guidelines for Healthy Eating" or something to that effect); this might also be achieved with a colour coding system (e.g., different colours for high, medium and low compliance). Such attributable messages have existed on tobacco products for years. Current back of package nutritional labels are confusing and of limited effectiveness. Colourful, graphic labels on the front of packages (FOP) may be more effective in influencing point of purchase decisions. The UK introduced a FOP graphic traffic-light image with key nutritional information to help buyers distinguish between healthy and less healthy products [53]. After it was introduced, Tesco supermarket saw sales of less healthy prepared meals drop by up to 41%, while those with healthier profiles more than doubled [49]. At least one Canadian retailer/producer has voluntarily introduced FOP nutritional information.

5.2.4. Redesign Stage Changes

Integrated nutrition profiling systems, with application across a variety of information mechanisms, including product labels, POP and advertising are made mandatory. At least 4 are in play in the USA [54], with the Guiding Stars programme [55] being one example that, in some evaluations, has had an immediate positive impact on purchasing behaviour [56]. Such programmes are currently largely implemented by third parties, but should become mandatory dimensions of information dissemination with appropriate revisions to regulation and guidances. The programmes could be offered by governments as multi-sectoral collaborations, drawing on the expertise and resources of a range of actors to be more effective.

5.3. Promoting Sustainability

Local/sustainable food systems are thought to counter many of the negative effects of the industrial, global model, including improved regional economic development, environmental improvements, and a higher quality food supply [57–61]. This heightened interest in such food systems has many analysts

exploring the many policy obstacles and opportunities to enhance their development, including examining the role of consumer information systems. Clearly there are many substantial and contentious elements to any discussion of food system sustainability, but looking at the use of terms associated with local/sustainable serves as a proxy for this larger debate and since it is currently top of mind for many consumers, especially those meeting the citizen-consumer categorization, we focus on it here. The information architecture for identifying local/sustainable systems is, however, poorly developed in Canada. We briefly review current rules on 6 terms that have historically been used by producers and manufacturers to infer the sustainability of their products, and then later propose a series of changes to enhance their utility for the citizen-consumer movement.

5.3.1. Defining Locality

Local foods are not automatically sustainable by nature of their locality [42], but there is evidence that local and sustainable production together create larger sustainability impacts than they do individually [62]. Because of this, the term local has appeal as a purchasing criterion within the citizen-consumer movement [42].

An obvious concern of regulators is how to define a term for use on labels and a review of the literature reveals that local has no specific definition [57] and is contentious, changing with each supply chain and region. One food system actor may view the term “local” as their surrounding community, another as a provincial or regional parameter [57,63,64]. The conceptual terrain has been set out by Kloppenburg *et al.* [65] in their arguments in favour of a foodshed analytical frame, but no specific distance has been attached to that concept. The most common modern definition is by sub-national political boundary, e.g., state, province, region or geographic feature. Earlier definitions focused more on cultural boundaries or unique eco-regional features, e.g., terroir. With the possible exception of Quebec, Canada does not have a tradition of terroir.

Given this murky terrain, Hinrichs suggests a “diversity receptive localization” as a template to support and protect local industries as this type of localization encourages “the richness of a place while keeping in mind the rights of a multi-faceted world. It cherishes a particular place, yet at the same time knows about the relativity of all places” [66]. Her approach takes into account that local economies would not remain fully autonomous from global trade. Hinrichs uses the example of an artisanal cheese maker who would not likely sell enough of his or her product within the limits of his or her locality to financially survive [66]. Also, many food items now considered staples cannot be grown in a Canadian climate, for example citrus, coffee and chocolate.

A small number of surveys of producers involved in local food distribution have been undertaken, lending credence to the idea that it is primarily the nature of the current supply chain that informs the definition of local among current food system actors. One study examining 3 counties in Washington State [64] found that 80 to 240 km was generally considered the local food distribution chain with several county boundaries crossed. But in a county with extensive direct market channels and premium niches, the county was more likely to be considered local. Those with limited direct marketing outlets were likely to have a larger view of local and were also more likely to include other supply chain actors in their definition. Only a small percentage of producers defined local by the quality of the social relations or the freshness attributes of the product. Consumers, on the other hand,

are more likely to employ a shorter distance to define local than producers [57], which may in part be a result of more limited knowledge of supply chain dynamics.

Given that most of the current literature highlights the importance of spatial definitions of local, some converging lines of analysis suggest that a local definition in the 160–200 km range is both conceptually legitimate and operationally viable at this stage in the relocalization process. Kloppenburg *et al.* [65], in their conceptual argument, emphasized that a functioning foodshed provides a diversity of products from a diversity of suppliers, within the context of the area being examined. Given the nature of Canadian settlement and agricultural development, few regions of the country would be able to provide that diversity within a 50 km distance. A wider range provides greater possibilities.

Although globalization is a centuries-old phenomenon in the food system, its most recent expression dates to events of the 1970's [31]. Fresh food now travels 50% further than it did in the late 70s. It was much more common for supermarkets in major urban centres to be supplied primarily by farms within a few hours (within 200 km) [67].

Another way to evaluate the term local is to contrast existing local and global food supply chains. The average North American food molecule currently may travel 2500–4000 km [61]. Full empirical studies of domestic food miles in Canada are lacking, but an Iowa study of local vs. global meal comparisons found that local supply chains are about 5% of global [68]. Five percent may underestimate the situation in many regions of Canada. For example, a supermarket vs. farmers' market comparative study in Toronto found a 50 fold difference, rather than the 20 fold difference reported in the Iowa study [69]. Based on this, assuming a 4000 km distance, 5% is 200 km.

There is currently an extensive, and contested, set of rules regarding Made in Canada labelling [70]. However, given the discussion above, this represents too wide a geography to qualify as a definition of local. There are rules around the use of local and related terms. Local or locally produced [71] is defined by the FDA as:

“domestic goods being advertised originated within 50 km of the place where they are sold, measured directly, point to point, or meets the requirements of section B.01.012 *Food and Drug Act (CFIA information bulletin)*, which states, “‘local food’ means a food that is manufactured, processed, produced or packaged in a local government unit and sold only in... the local government unit [or] one or more local government units that are immediately adjacent to the one... in which it is manufactured, processed, produced or package” (FDA 5.1).

According to officials, the CFIA policy pertaining to “local” was instituted to prevent “violations of section 5(1) of the FDA” in the “use of the term “local” on fruits and vegetable” (*Food and Drug Regulations C.R.C., c. 870; B.01.012*). This definition reflects a supply chain distance approach, consistent with definitions used in some European and U.S. jurisdictions where farmers' markets are central to the conception of local [57]. The distance specified in the CFIA rules is limited because it assumes a direct marketing context for local, and consequently focuses on fruits and vegetables, the most common direct-marketed goods. This represents, however, only one stream of local market development, and for only a limited segment of the food supply.

5.3.2. Production System and Processing from which the Food Derives [42]

The current system focuses primarily on product, not the process by which food is produced. In this view, how a food is produced is not relevant unless it changes accepted food safety and nutritional parameters. There are a few significant exceptions to this general rule. Rules for using the label organic, kosher or halal are all process-based. They describe how the food is grown, raised and processed. Canada has regulations about the use of these terms [16], but given consumer concerns and interests, and how these relate to national sustainability objectives, there is a need to widen the use of process terms. Barham ([72], p. 354) has stated:

The focus on process challenges the inability of market economics to take long term impacts into account, and simultaneously calls for conscious social decision making about the direction of the economy, rather than passively waiting for the market to tell us, after the fact, what is optimum. It means that environmental and social impacts will have to be considered ahead of time...The social construction of quality, as it is represented in values-based labeling, can call on aspects of human rationality that move beyond the economic. To the extent that it incorporates recognition of the responsibility of choice, it breaks free from defining the human being as primarily a self-interest maximizer.

The regulation of 5 key terms describing different approaches to sustainable food production provides information on the current state of affairs and how it might be altered to better facilitate knowledge transfer to citizen-consumers. Though not always emblematic of the most sustainable approaches, these terms are used on many current third party labels or are under consideration, so we use them as indicators of the state of regulatory development:

- Integrated Pest Management (IPM)—in programmes that demonstrate reduced chemical use with alternative pest control methods.
- Ecological—where the certification results in environmental stewardship and enhanced biodiversity.
- Environmentally friendly—where a programme results in reduced packaging and promotes recycling and energy conservation.
- Natural—to describe a minimum standard of animal welfare.
- Sustainable agriculture or sustainable food production—when food producers and processors follow a sustainable food production regime that isn't specifically organic.

In Canada at present, there are no specific regulations that refer to 4 of the 5 terms [42]. However, there are some product-by-product pre-market assessment decisions that would appear to have an impact on some of them. Given the current absence of regulations on their use, producers and processors would be subject to a case-by-case assessment, based on general fraud provisions. Case-by-case interpretations, under conditions of ambiguity, have not proven particularly helpful to sustainable producers in Canada, and the federal government has recently announced that it will eliminate such assessments as a cost saving measure, when not linked to food safety. The 25-year journey to organic regulation serves as one example, as organic producers operated during this period under threat of unfavourable decisions, in the absence of clear rules governing the term.

A second unfortunate case involved the suspension of a pesticide reduction labeling programme on the Canadian Prairies, Pesticide-free Production Canada, due to an unfavourable decision on their pesticide-free label by CFIA officials. The CFIA argued, with some justification, that pesticide-free could not be achieved and was misleading within the programme since producers were allowed to apply pesticides outside the growing season (*i.e.*, for spring and fall cleanup, pre-plant and post-harvest). In a third case, highlighting the benefits of specific term definition over general provisions, CFIA officials offered an interpretation to a national IPM project that the term ecological could not be used because it had already been reserved by regulation in the province of Quebec for use in organic production. The interpretation had a dampening effect on discussions of marketing strategies for the project. It was a rational decision on the part of CFIA, but highlights how sustainable producers can unintentionally undermine each other's efforts when a coherent and comprehensive regulatory framework is lacking [42].

The term natural is more clearly problematic, given current regulations. It has traditionally been reserved for processed food items. However, the CFIA has been working on a "naturally raised" policy in regards to livestock since a consultation paper on the topic was released in 2005. Guidelines were released in late 2011 and are in effect as the CFIA considers public comments from its latest online consultation [73].

"Foods or ingredients of foods submitted to processes that have significantly altered their chemical, physical, or biological state should not be described as natural. "Natural" can generally be understood as meaning:

- a natural food or ingredient of a food is not expected to contain, or to ever have contained, an added vitamin, added mineral nutrient, artificial flavouring agent, or food additive;
- a natural food or ingredient of a food does not have any constituent or fraction thereof removed or significantly changed, except the removal of water; and/or
- a natural food or ingredient of a food that has been produced through the ordinary course of nature without the interference or influence of humans." [16]

Given this recent decision to reserve the term "natural" in this way, it appears livestock programmes, which are traditionally frequent users of the term, will not be able to use it. It represents a significant departure from their earlier discussion paper [74] on natural and humane livestock production, when it appeared then that the term natural livestock would be linked to existing federally supported Codes of Conduct for the Care and Handling of Farm Animals, developed from the late 80s under the guidance of the Canadian Agri-food Research Council (CARC). Many Canadian animal welfare and natural livestock standards, including those of Local Food Plus (LFP) and the BC Society for the Prevention of Cruelty to Animals (BCSPCA), already reference the CARC Codes of Practice, but the new rules make this less relevant to create legitimacy for the claim.

Although not currently specifically regulated by CFIA, the use of the term "sustainable agriculture" could be problematic in the future, given the CFIA practice of consulting with other departments, in this case AAFC, on unspecified labeling terms. As defined by Agriculture and Agri-food Canada [75], sustainable agriculture is a system that:

- protects the natural resource base; prevents the degradation of soil, water, and air quality; and conserves biodiversity
- contributes to the economic and social well-being of all Canadians
- ensures a safe and high-quality supply of agricultural products
- safeguards the livelihood and well-being of agricultural and agri-food businesses, workers and their families.

Other organizations define the term more consistently with an agroecological interpretation of sustainability [35] and demonstrate a greater commitment to reducing reliance on environmentally problematic processes and inputs.

5.3.3. Efficiency Strategies

Requiring immediate attention are existing federal labeling regulations related to the 3 terms that appear to be out of step with other policy-related developments at the federal level and/or conceptual developments in the field—local, natural and sustainable agriculture. Making the labeling rules more supportive of the local and sustainable food movement will require better integration with those concepts and processes.

5.3.3.1. Local

If the CFIA wishes to regulate the term local, then it would seem more feasible to set a distance of 200 km rather than the current 50 km and apply it to a wider range of products and marketing channels. An interim measure would be to retain a provincial focus in the short term, and then shift to 200 km within a specified transition period. This again reflects a more realistic interpretation of existing supply chains.

5.3.3.2. Natural Livestock Production

Natural livestock production is, admittedly, notoriously difficult to define. It also has an imprecise, but usually significant, relationship with humane livestock production. The term is more closely related, currently, to food preparation and processing than to livestock production, which partly explains the direction that CFIA is pursuing in its regulation of the term.

Linking natural with wild, however, is out of step with other parts of the labeling regulatory apparatus. In the organic standards [76], part of the federal government organic regulatory apparatus, the term employed for wild products is ‘wild crafted’. For consistency, it would make sense for CFIA to not now use natural in other parts of its labeling regime for wild crafted products.

It would also be coherent to link the definition of natural and humane livestock production to the existing Canadian Agri-food Research Council (CARC) Recommended Codes of Practice for the Care and Handling of Farm Animals [77]. Developed from the 1980s with numerous scientists, practitioners, and some government and NGO representatives, and currently undergoing a round of revisions under the auspices of the National Farm Animal Care Council (NFACC), these voluntary codes have received fairly widespread acceptance from the agricultural industry, although they are viewed as minimal guidance by many NGOs and humane treatment activists. Nevertheless, they have

also been used as foundational material for codes developed by humane treatment NGOs. LFP has also used them as the foundation of their livestock protocol. As has been done in other labeling rules, there is an opportunity here to provide a brief definition of the term and reference the CARC (soon NFACC) codes as the minimal basis for use of the term.

5.3.3.3. Sustainable Production

Sustainable agriculture definitions are numerous, but in Canada, they have yet to be directly translated to specific product labels, and there is no current guidance on the term in the Guide to Food Labeling and Advertising [16]. Given the history, discussed above, of ambiguously regulated sustainable production terms, a preliminary assessment of government use of the term, relative to leading sustainability specialists, is important for assessing potential future challenges.

Governments typically employ definitions that account for multiple interests and policy pressures, but are not necessarily rooted in the historical context from which the concept evolved. The early scientific pioneers of sustainable agriculture (e.g., FH King, *Sir* Albert Howard), had a more profoundly ecological interpretation of sustainability [78–80] than is reflected in Canadian government definitions (see discussion above). Numerous sustainability schools of thought have emerged over the years, producing production systems consistent with the early pioneers and more grounded in an understanding of ecology [81]. Much of the scientific literature of today employs an agroecological paradigm [35,36,82,83] that is at odds with the underlying paradigms of the Canadian government approach. The federal government's conception of sustainable agriculture is also out of step with its main trading partners and international agencies, such as the FAO [84]. Labeling regulations consistent with the conceptual foundations of the term and other bodies would bring coherence to its use, both for locally and internationally traded goods. We foresee, ultimately, the need for regulation of a full suite of sustainability-related terms and given that Canada already participates in numerous international reciprocity and harmonization activities (including organic products and pesticide approvals), these terms will need to be applied consistently with trading partners.

5.3.4. Substitution

For 3 of the 6 terms, IPM, ecological and environmentally-friendly, ambiguity will likely remain until they are more precisely defined. CFIA usually consults the food industry on such matters and would likely need to engage in a process similar to that used with the term natural to develop such precision. Such consultations and rule making usually unfold over several years. However, the difficulty of such consultations is that few participants, including CFIA officials themselves, have a well-rounded understanding of agroecology and how to apply it identifying production systems for consumers [42]. If an agroecological framework is not applied, such consultations are unlikely to produce a useful outcome.

Table 1. Hypothetical integrated label for an instant breakfast cereal (adapted from MacRae *et al.* [81])^a.

		Rating^b
Contents	Whole wheat	
Production	Certified organic, advanced production with biodiversity enhancements	8
Processing	Regular milling: excess heat	5
	No supplements	10
	Moderately strong environmental management system in place	7
Product sourcing and distribution	Local, within 200 km	8 ^c
Social justice	Complies with all safe work regulations	5
	Wages above industry average	7
	No processor involvement in local community development or charitable work	0
Overall score		50/80

^a Such a label might also contain more specific information, as required by current regulations;

^b Based on a 10-point scale; ^c Based on the following scale: 10—direct sale within 50 km; 8—within 200 km; 6—within 500 km; 4—within province; 2—within Canada; 0—procured internationally.

5.3.5. Redesign

Consistent with a joined up approach to food policy, the redesign stage would focus on integrated and profound changes to existing rules in all the domains addressed in this paper. Using product labels as an example, the state would implement comprehensive product labelling that includes information on environmental and social justice impacts of production, processing and distribution. An example of such a label is provided in Table 1. Such labels could be numeric (as shown here) or colour coded and would clearly require significant analysis to support the rating system. A more visually interesting approach has been proposed by Sustain UK [85], the use of a range of pictograms that quickly convey the degree to which a number of sustainability parameters have been met by the product.

Similar integrated efforts would be required for POP and TV advertising. The environmental features could also be integrated with redesign nutrition elements presented in section 5.2.

6. Conclusions

Health and sustainability are public policy objectives, but Canada's food information rules and practices may not be optimal to support their achievement because the information provided is frequently determined by the marketers of product in a semi-regulated environment. No institution or agency has responsibility for determining the overall coherence of consumer food messages relative to these broader social goals of health and sustainability. Individual consumers do not have the resources to determine easily the completeness of any firm's messages, particularly when faced with the size of food industry advertising budgets. The healthy eating messages of health departments are often competing with contradictory or incomplete messages permitted by the regulatory framework of other arms of government. Investments in programs that successfully promote environmental stewardship in agriculture are undercut in the market because consumers often have too little information to support

those efforts with their dollars. This problem exists despite the emergence of “citizen-consumers” who have a broader approach to food purchasing than solely individual maximization. Only recently have some health professionals and sustainable agriculture proponents turned their attention to all these factors and begun to design interventions that take them into account. Significant short, medium and long term regulatory changes are required to facilitate the citizen-consumer phenomenon and better support consumers in their efforts to promote health and sustainability in the Canadian food system.

Acknowledgments

Many thanks to Debra Moffett whose research greatly enhanced the original report from the Toronto Food Policy Council [1] on which this paper is based. Josée Johnston of the University of Toronto was also instrumental in helping us understand many issues related to the citizen-consumer phenomenon.

Conflict of Interest

The authors declare no conflict of interest.

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