“For 50 years an increasingly specious, pseudoscientific dogma has been growing in the Western world. This hypothesis originally proposed that coronary heart disease, the main cause of death here, is caused by the kind and amount of fat in our diets. That hypothesis was based upon fragile and selected data. The hypothesis has now been tested in dozens of clinical trial costing hundreds of millions of dollars… The evidence consistently says, ‘No, this is not a sound hypothesis.’” (Mann, 1993 cited by Ottoboni, 2012)

The general public is becoming increasingly aware of the failure of the official nutritional policy of United States and other countries. Books like Good Calories, Bad Calories: Fats, Carbs, and the Controversial Science of Diet and Health (Taubes, 2008), Why We Get Fat and What To Do About It (Taubes, 2011) and The Big Fat Surprise: Why Butter, Meat and Cheese Belong in a Healthy Diet (Teicholz, 2014) have exposed the disconnect between nutrition science and nutrition policy, and have told the story of how we’ve come to this point in history.

Environmental concerns, often assembled under the often ill-defined term “sustainability,” are now being used to legitimize plant-based dietary policy and advice that can no longer be justified from nutrition science. The rhetoric and behavior being employed to justify this non-scientific position is remarkable similar to that used during the “heart-healthy” controversy of a generation ago. For this reason, both topics will be discussed in this paper.
“Beef: The REAL Health Food”

One definition of health food is “any natural food popularly believed to promote or sustain good health, as by containing vital nutrients, being grown without the use of pesticides, or having a low sodium or fat content” (dictionary.com, 2014). This source states the date of origin of this phrase as “1880–1885,” the beginning of the publishing career of Dr. John Harvey Kellogg, a faith-based advocate for a vegetarian diet and “biological living” (Urantia, 2014). Dr. Kellogg, along with his brother Will Keith “changed breakfast forever” when they developed and started marketing the first breakfast cereals at the turn of the 20th century (Kellogg’s, 2011). The popularity of some of Dr. Kellogg’s “treatments” have fortunately declined (e.g. yogurt enemas), but many of his disproven beliefs still persist today – promoted by the health food and other related industries, and enshrined in public policy.

The 2010 Dietary Guidelines for Americans recommends restricting our intake of saturated fat to less than 7 percent of calories, and our cholesterol intake to less than 300 mg per day (less than two eggs). They promote the use of low-fat milk and lean meat, and the use of “meat substitutes” in school lunches. These recommendations are consistent with the official dietary policy that began in 1977 with the release of the first Dietary Goals for the United States by the United States Senate Select Committee on Nutrition and Human Needs. These guidelines were not justified by the then-available science. They were adopted despite the concerns of researchers and physicians. Subsequent research has disproven the hypothesis upon which they were based. They have failed to produce the promised benefits. Since animal products are a significant source of saturated fat and cholesterol, the official advice has been to limit the consumption of animal products in general and red meat in particular. At best animal products have been wrongly accused and unfairly impacted by public policy; at worst vast physical and fiscal harm has been done to the American public.

It will be argued in this presentation that a diet based upon animal products (meat, poultry and eggs, fish and shellfish, and dairy) has repeated been shown to not only “promote or sustain good health,” but produce greater improvements in biomarkers of chronic disease risk than plant-based, high carbohydrate diets, and frequently greater than that produced by medication. In addition, it will be argued that it is in fact the refined carbohydrates (starches and sugars) and not animal protein or animal fat that are the most like dietary causes of numerous chronic illnesses. Further, it will be argued that, unlike plant-based diets, diets based upon animal products supply all of the known “vital nutrients” without the need for fortification or supplements. Most significantly it will be argued that the idea that a health food must have “a low … fat content” is scientifically unjustified, as are the frequent assertions that Americans should limit their consumption of red meat for the sake of their health (concerns regarding environmental and sustainability issues will be addressed in the companion paper “Red Meat is Green”). Since beef is America’s favorite red meat, the official and popular dietary messaging has been to limit beef consumption. The actual evidence, however, fully justifies describing beef as the real health food.
**Introduction:** A thorough discussion of diet, health and human nutrition is beyond the scope of this paper. The comprehensive review provided by Taubes in “Good Calories, Bad Calories” (Taubes, 2008) is highly recommended. Rather, the remainder of this paper will be a brief examination of the scientific controversy regarding dietary cholesterol and saturated fat recommendations.

In 1977 the United States Senate Select Committee on Nutrition and Human Needs chose one side of an on-going scientific debate. They endorsed the unproven diet-heart hypothesis, which proposed that the excessive consumption of fat in our diets – particularly saturated fats – raises serum cholesterol levels and so causes atherosclerosis, heart disease, and untimely death (Taubes, 2008). That decision was antithetical to the then-mainstream paradigm of the fattening carbohydrate, since low fat diets are higher in carbohydrates by definition. Ultimately, the goal of all dietary policy became reducing heart disease, and what was good for the heart must be good for every other diet-related matter. Thus an unproven hypothesis became the unquestioningly accepted basis for dietary recommendations for over a generation. The 2010 Guidelines, the “federal government’s evidence-based nutritional guidance to promote health, reduce the risk of chronic diseases, and reduce the prevalence of overweight and obesity,” (USDA, 2011) continues to maintain this position. The USDA’s admission that despite their dietary advice, “more than one-third of children and more than two-thirds of adults in the United States are overweight or obese.” (USDA, 2011) suggests the need for a thorough re-evaluation of the diet-heart hypothesis. A brief examination of the effect of dietary cholesterol upon serum cholesterol levels and the relationship between saturated fat and coronary heart disease will demonstrate that this hypothesis was not true and that advice to limit the consumption of animal products is groundless.

**Discussion:** At the time of the Committee’s decision there was a vigorous scientific debate about the diet-heart hypothesis. “Two strikingly polar attitudes persist on this subject, with much talk from each and little listening between.” (Blackburn, 1975). Three years later, the year after Dietary Goals was released, Thomas Dawber wrote: “It must still be admitted that the diet-heart relation is an unproved hypothesis that needs much more investigation.” (Dawber, 1978). Indeed, the Committee didn’t even know if their recommendations would work. The first entry on their list of “Important questions, which are currently being investigated” was “Does lowering the plasma cholesterol level through dietary modification prevent or delay heart disease in man?” (Senate Committee, 1977) Available research suggested it would not.

Two Columbia University biochemists had demonstrated in 1937 that dietary cholesterol has little or no influence on serum cholesterol (Rittenberg, Schoenheimer, 1937). This finding has never been refuted. For most individuals, the effect of following the recommendation would be “clinically meaningless.” (Howel et al., 1997). Nevertheless, we are still advised to eat less cholesterol because “telling people they should worry about cholesterol in their blood but not in their diet has been deemed too confusing” (Taubes, 2008). Lowering serum cholesterol by replacing saturated fat with polyunsaturated fats had produce mixed results. Such cholesterol lowering interventions
occasionally reduced heart disease mortality, but they increased cancer mortality (Dayton et al., 1969), so there was no decrease in total mortality. More deaths were recorded in the intervention group of one study, but the results went unreported for 16 years (Franz et al., 1989), because “we didn’t like the way it turned out.” (Taubes, 2008). This relationship between low cholesterol and increased cancer mortality has been repeatedly observed (Feinleib, 1983).

Ironically Ancel Keys, the father of the diet-heart hypothesis, reported seven years after the Guidelines were released that neither high cholesterol nor saturated fat consumption predicts total mortality (Keys et al, 1984). Keys later recanted the idea that dietary cholesterol raises blood levels: “Cholesterol in food has no effect on cholesterol in blood and we’ve known that all along.” “I’ve come think that cholesterol is not as important as we used to think it was,” he said, “Let’s reduce cholesterol by reasonable means, but let’s not get too excited about it.” (Boffey, 1987).

Just when the Committee was forming the guidelines that would shape the eating habits of every American, the first reports on Low Density Lipoprotein (LDL) cholesterol and High Density Lipoprotein (HDL) cholesterol were emerging from the Framingham, San Francisco, Puerto Rico, Albany and Honolulu cohort studies. They demonstrated that: Total cholesterol does not predict future heart disease; LDL cholesterol is a “marginal risk factor;” HDL cholesterol is a 4-fold better predictor of risk than LDL cholesterol and the only reliable predictor of risk for men or women over 50. It was demonstrated that saturated fat raises HDL cholesterol while carbohydrates lower it (Castelli et al, 1977, Gordon et al, 1977). It was reported in 1981 that saturated fat and total fat were positively associated with longevity (Gordon et al, 1981, Feinleib, 1981). This information would not deter policy makers from labeling saturated fat “artery-clogging” and that carbohydrates were “heart-healthy diet food.” The 2010 Guidelines, still state that “Healthy diets are high in carbohydrates.” (USDA, 2010)

The basis for recommending low-fat and low-saturated fat diets has been further disproven by recent research. Meta-Analyses on “Reduced or modified dietary fat for preventing cardiovascular disease” found no effect on longevity, and no “significant effect on cardiovascular events.” (Hooper et al, 2001). An analysis of “Multiple risk factor interventions for primary prevention for coronary heart disease” demonstrated that “The pooled effects suggest multiple risk factor intervention has no effect on mortality.” (Ebrahim et al. 2006) The Women’s Health Initiative failed to prove several frequently-stated dietary myths, although policy hasn’t been affected. “The intervention did not reduce risk of CHD or stroke.” (Howard et al. 2006) “A low-fat dietary pattern did not result in a statistically significant reduction in the risk of invasive breast cancer...” (Prentice et al. 2006). “There is no evidence that a low-fat dietary pattern intervention reduces colorectal cancer risk...” (Beresford et al. 2006). “A low-fat dietary pattern among generally healthy postmenopausal women showed no evidence of reducing diabetes risk...” (Tinker et al. 2008). Prior to the release of the 2010 Guidelines, the FAO stated that “The available evidence from cohort and randomized controlled trials is unsatisfactory and unreliable to make judgment about and substantiate the effects of dietary fat on risk of CHD.” (FAO, 2010, Skeaff, Miller, 2009). And in 2010 “A meta-
analysis of prospective epidemiologic studies showed that there is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of CHD or CVD.” (Siri-Tarino et al 2010) Yet the recommendations to restrict total fat and saturated fat consumption continue.

Substantial evidence has accumulated that these recommendations are in fact harmful. "The low-fat, high-carbohydrate diet, promulgated vigorously ... by the USDA food pyramid, may well have played an unintended role in the current epidemics of obesity, lipid abnormalities, type II diabetes, and metabolic syndromes.” (Weinberg, 2004). The rate of obesity in adults has doubled in the last 20 years. It has almost tripled in kids ages 2-11. It has more than tripled in children ages 12-19 (CDC, 2011). Without major changes, 1 in 3 babies born today will develop diabetes in their lifetime (ADA, 2011). Average healthcare costs for someone who has one or more chronic conditions is 5 times greater than for someone without any chronic conditions (Partnership for Solutions, 2004). Diets based upon animal products and high in fat have been shown to produce greater weight loss, better blood glucose control, and reduced CVD risks compared to low fat diets (Gardner, 2007).

Given that the numerous symptoms of metabolic syndrome are most effectively treated by adopting a low carbohydrate, high fat way of eating (Taubes, 2008), and that such diets will be based upon animal products, including red meat. And since beef is America’s preferred red meat, calling beef a health food is justified. When the research, clinical and anecdotal results of such diets are compared with those for diets based upon the products of the low-fat industry, calling beef the real health food is also justified.

“Red Meat IS Green!”

Gary Taubes, in “Why We Get Fat and What to Do About It,” provides the introduction to this presentation (Taubes, 2011):

"Carbohydrate-restricted diets typically (if not, perhaps, ideally) replace the carbohydrates in the diet with large or at least larger portions of animal products—beginning with eggs for breakfast and moving to meat, fish, or fowl for lunch and dinner. The implications of that are proper to debate. Isn’t our dependence on animal products already bad for the environment, and won’t it just get worse? Isn’t livestock production a major contributor to global warming, water shortages, and pollution? When thinking about a healthy diet, shouldn’t we think about what’s good for the planet as well as what’s good for us? Do we have a right to kill animals for our food or put them to work for us in producing it? Isn’t the only morally and ethically defensible lifestyle a vegetarian one or even a vegan one?"
Taubes correctly avoids these issues: “These are all important questions that need to be addressed, as individuals and as a society. But they have no place in the scientific and medical discussion of why we get fat.”

Is the statement that “livestock production a major contributor to global warming, water shortages, and pollution” correct? Do animal products from ruminants have a similar “footprint” to those from fish, poultry and swine? Is the production of a plant-based diet more sustainable? Is the belief that what’s best for humanity intrinsically bad for the planet correct?

Like “healthy diet,” the term “sustainability” encompasses a number of largely unexamined assumptions. When examined, they frequently do not support the popular understanding. Sustainability is a multifaceted topic that should consider of societal, economic, and environmental aspects. Frequently, however, concerns about the environment are the sole consideration. Hence “environmental,” “green,” and “sustainable” have become synonymous. These frequently conflated terms must be examined individually.

In the late 1980s “sustainable agriculture” began to receive attention and funding. At that time, it was synonymous with “organic” and the vegetarian belief system. Prominent members of the early organic and sustainable agriculture movements, in fact, went so far as to state that “animals have no place in sustainable agriculture” (Ballerstedt, 1992). The same belief system that heavily influenced the formation of the Dietary Guidelines, has informed the conventional wisdom regarding environmental issues. And those issues will now apparently will be used justify continuing to advocate plant-based diets.

“The USDA committee’s mandate is to ‘review the scientific and medical knowledge current at the time.’ But despite nine full days of meetings this year, it has yet to meaningfully reckon with any of these studies—which arguably constitute the most promising body of scientific literature on diet and disease in 50 years. **Instead, the committee is focusing on new reasons to condemn red meat, such as how its production damages the environment.** However, this is a separate scientific question that is outside the USDA’s mandate on health.” [emphasis added] (Teicholz, 2014)

Is the belief that the production of red meat has a greater impact on the environment than the production of the components of a plant-based diet justified? In other words Lierre Keith offers a substantial refutation in her book “The Vegetarian Myth” (Keith, 2009).

**Aspects of Sustainability:**

**Societal:** What is the social impact of the various alternatives? Are the health claims made for plant-based diets, for example, justified? Can the long-term health and well-being of large numbers of humans be maintained on plant-based diets? Projections
for a need to double the world’s food supply by 2050 should focus our debates and research. The quote "Any society is only three square meals away from revolution," while undetermined in origin, is nonetheless true.

The archeological record and anthropological research demonstrates that the human diet was based upon animal products. Research confirms that the modern diet ought to be, too. The mistaken belief that the healthy diet is a plant-based one, based upon carbohydrates, has produced an epidemic of chronic disease in the United States (Taubes 2011). The costs of this epidemic are unsustainable (these costs will be discussed in the Economic section, below). Diets based upon animal products produce improvements in a wide variety of chronic diseases. (Taubes, 2008) These diets are more sustainable – people stay on them – as compared with low-fat and semi-starvation diets (Taubes, 2008).

**Ecological:** A discussion of the ecological impact of any agricultural systems must begin with an acknowledgment that: Frequently stated “facts” against ruminant agriculture regarding greenhouse gas emissions and water use have been repeatedly shown to be wildly inaccurate; Our perception of “wilderness” and “nature” has been as distorted as our understanding of what constitutes a “healthy diet.” The following quote by D. F. Lott is extremely helpful:

“When Lewis and Clark headed west … they were exploring not a wilderness but a vast pasture managed by and for Native Americans” (Lott, 2002).

When Europeans first arrived in North America, they did not find a primeval landscape. Rather, they encountered a land significantly altered by humans through the use of fire, sophisticated agricultural techniques, mining, and road and mound building (Mann, 2006).

“At the time of Columbus the Western Hemisphere had been thoroughly painted with the human brush. Agriculture occurred in as much as two-thirds of what is now the continental United States, with large swathes of the Southwest terraced and irrigated. Among the maize fields in the Midwest and Southeast, mounds by the thousand stippled the land. The forests of the eastern seaboard had been peeled back from the coasts, which were now lined with farms. Salmon nets stretched across almost every ocean-bound stream in the Northwest. And almost everywhere there was Indian fire.”

“The virgin forest was not encountered in the sixteenth and seventeenth centuries,” wrote historian Stephen Pyne, “it was invented in the late eighteenth and early nineteenth centuries.” Far from destroying pristine wilderness, that is, Europeans bloodily created it. (Mann, 2006)

Forage plants are those plants eaten by animals directly as pasture, crop residue, or immature cereal crops, those cut for fodder, and conserved for later use as hay or silage. These diverse crops vary widely in their adaptation and feed quality. They are typically low in fat, high in fiber, and not utilizable by humans. While forage crops
can be grown on ground incapable of producing feedstuffs that are utilizable by humans, greater yields can be achieved on better arable ground. These crops have limited economic value until converted into meat, milk, and fiber. Three quarters of the feed consumed by the United States’ beef cattle is forage (Heath, 1985).

Grasslands, including sown pasture and rangeland, are among the largest ecosystems in the world. The proportion of the earth’s land area covered by grasslands in 2000 was estimated at 3.5 billion hectares (8.6 billion acres), representing 26% of the world land area and 70% of the world agricultural area. There are 255 million hectares (630 million acres) of pasture, pastured woodland, pastured cropland and public grazing lands in the US. Less than 9 percent of the cropland is pasture (Heath, 1985).

Perennial forage crops increase soil organic matter, fixing more carbon than woodland. Pasture crops reduce soil erosion, improving the infiltration of water into the soil profile and surface water quality. Without managed grazing or periodic burning, many grasslands will not remain grasslands. Ecological succession results in encroachment by woody, less productive species.

The symbiotic relationship between the ruminant animal and the microbial population in the rumen permits these mammals to thrive on a low-fat, high-fiber diet. This production of high-quality protein and animal fat offers an achievable form of sustainable form of agriculture. Pasture-based agriculture produces increased wealth while requiring fewer non-renewable inputs than annual crops. Biological nitrogen fixation by forage legumes and efficient nutrient cycling via the grazing animals’ dung and urine reduces fertilizer requirements. Managed grazing of adapted pasture mixes reduces pesticide use. These perennial crops require less tillage, cultivation, and harvest than annual crops, meaning less equipment is needed, and less petroleum used. The key to farm sustainability is lowering the cost of production, rather than achieving maximum production. Well-managed pasture-based production systems are the means of achieving the lowest cost of production of animal products.

**Economic:** Forage-based livestock production systems are fundamental to the global economy, and are more economically sustainable than annual cropping systems. Grasslands contribute to the livelihoods of more than 800 million people, worldwide. They are a source of food and forage, energy and wildlife habitat. The single greatest source of new wealth (the conversion of natural resource into a salable commodity) in the US is the conversion of grass into beef.

The fiscal crisis currently facing the United States is, to a significant degree, driven by the dramatic increase in health care spending. US health care expenditures surpassed $2.3 trillion in 2008, more than three times that spent in 1990, and over eight times that spent in 1980 (CDC, 2010). The share of the U.S. economy that Americans spend on health care has increased from 7.2% of the Gross Domestic Product (GDP) in 1970 to 17.6% of GDP in 2009 (CDC, 2010). Chronic conditions such as diabetes, heart disease, stroke, obesity, cancer, gastroesophageal reflux disease (GERD) and Alzheimer’s disease – in other words, metabolic diseases – are taking a heavy toll on
health while taking an increasing portion of the health care spending. Chronic diseases account for $3 of every $4 spent on healthcare. That’s nearly $7,900 for every American with a chronic disease (CDC, 2010).

Seventy percent of deaths in the US are due to chronic diseases (CDC, 2010). Chronic diseases such as diabetes, cancer, and heart disease are the leading causes of disability and death in the US. About 25% of people with chronic diseases have some type of activity limitation, including restrictions in employment and education (Partnership for Solutions, 2004).

Conventional wisdom states that obesity increases the risk of developing conditions such as diabetes and heart disease. An opinion informed by recent research understands that obesity is a metabolic disorder and is associated with other metabolic disorders, such as diabetes and heart disease. Obesity is not a cause of metabolic syndrome, it is one of metabolic syndrome’s conditions. This fundamental misunderstanding contributes to the epidemic of chronic diseases, including obesity, we’re now experiencing.

The rate of obesity in adults has doubled in the last 20 years. It has almost tripled in kids ages 2-11. It has more than tripled in children ages 12-19 (CDC, 2011). Without big changes, 1 in 3 babies born today will develop diabetes in their lifetime (ADA, 2011). Average healthcare costs for someone who has one or more chronic conditions is 5 times greater than for someone without any chronic conditions (Partnership for Solutions, 2004).

Here are the yearly costs due to a handful of conditions associated with metabolic syndrome:

- Heart Disease and Stroke $ 432 Billion (Mensah and Brown, 2007)
- Diabetes $ 174 Billion (ADA, 2011)
- Obesity $ 147 Billion (Finkelstein, et al., 2009)
- GERD (2005) $ 2 Billion / week, $ 104 Billion in lost productivity (IFFGD, 2008)
- All cancers, except lung and lymphoma $ 100 Billion
- Alzheimer’s $ 148 Billion (AA, 2007)

More than 1 trillion US dollars are represented by this partial list of conditions now thought to be associated with metabolic syndrome. Metabolic syndrome is most effectively treated by adopting a low carbohydrate, high fat way of eating. It’s likely caused by eating diets high in carbohydrate (Taubes, 2008). Until that is officially accepted by the massive disease treatment industries and agencies, health care costs will continue to be unsustainable and will threaten the long-term sovereignty of this country. To say nothing of the pain and suffering of millions of people.
**Conclusions:**

Ruminant animals occupy a unique ecological niche. The products of ruminant agriculture, red meat and full-fat dairy products, are a significant source of the world’s food supply and must be in future. The planet’s grasslands, both native and improved, are not widely appreciated nor are they close to achieving their potential. Agricultural systems based upon these natural and improved resources are sources of significant economic activity. Diets based upon anima products, including those from ruminants, have been shown to not only maintain human health, but restore it by correcting symptoms of metabolic syndrome, a significant factor in the current healthcare crisis. Red meat, therefore *should* be considered “green.”

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