

# Dissident Dietary Credibility: The Power of Discontent

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# Dissident Dietary Credibility: The Power of Discontent

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## Abstract

This article investigates the ways in which food author Verburgh has attempted to engineer credibility for himself, his book *The Food Hourglass*, and the arguments it contains. Through a careful reading and analysis of the text, interviews with the author, and other “credibility conquest” participants, we show that Verburgh engineers credibility through enlisting the authority of science, questioning the integrity of others, and positioning himself as a dissident. This initiates a constant renegotiation of credibility in the interaction between Verburgh, nutrition scientists, and others, in which Verburgh actively constructs his public credibility at the expense of scientific credibility.

## Keywords

dietetics, food hourglass, scientific credibility, dissidence, epistemic uncertainty, discontent

## Introduction

At the beginning of this century, Willet (2001) wrote that “[r]esearch on diet and nutrition seems to contradict itself with aggravating regularity” (p. 27). Through this statement he joins ranks with those who problematize the

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credibility of dietary claims and point out the difficulty of assessing the value of claims connecting certain foods and ingredients to health effects. That difficulty exists for professionals as well as for lay members of the public, especially in a world that is constantly bombarded with dietary advice.

Citizens of developed countries are confronted with claims pertaining to nutrition, foods, ingredients, and diets by governments, nongovernmental organizations, food companies, celebrities, their relatives, doctors, and scientists—every day. These claims compete with one another for priority in the dietary credibility marketplace. Importantly, this marketplace is populated with a large variety of claims directed at a very diverse audience. At one end of the spectrum, claims on the need and function of clinical nutrition for the ill are rarely doubted. Similarly, some consensus exists among professional nutrition scientists on macro- and micro-nutrient requirements. These claims have an apparent social robustness, constructed either because of a somewhat limited role of the public (clinical nutrition) or through decades-long displays of health benefit (Freidson, 1988; Jasanoff, 2003; Nowotny, Scott, & Gibbons, 2001). At the other extreme of the spectrum, however, claims concerning whether or not coffee is good for us, whether we ought to opt for margarine or butter, or how to lose weight are the objects of fierce public and professional debate (Hilgartner, 2000; Scrinis, 2013).

This article studies the foundations for the public credibility of one such claim. We analyze the strategies employed to build credibility for a specific low-carb diet as presented in the book *The Food Hourglass* (Verburgh, 2014). The book was launched in English in 2014, but our study focuses on the publication of the Dutch original (Verburgh, 2012), targeted at Flemish and Dutch audiences. In this small book market, it sold over 350,000 copies, quickly reaching the top of the bestseller lists. It is now on its 45th print run. It was quickly followed by a cook book (Weuring & Verburgh, 2013), further “operationalizing” the dietary advice it contains. As will become clear below, credibility was built through close attention to narratives of eating, a move away from what is constructed as scientific orthodoxy and a critique of the vested interests of nutrition science in both Belgium and the Netherlands.

Our interest in Verburgh and *The Food Hourglass* is an academic one. We ask how Verburgh managed to establish credible expertise in a time of epistemic uncertainty. To this end, we studied how author Kris Verburgh built credibility for his claims, which sometimes existed in stark opposition to the dominant, government-backed dietary advice. He retained (the majority) of this public credibility after being heavily critiqued by nutrition scientists for his deviance from scientific consensus, and even after his book was called “dangerous” in national newspapers. The debate surrounding *The Food Hourglass* and the ensuing distribution and redistribution of credit and

expertise between current consensus and critique, or loyalists and dissidents (Jones, 2002), are illustrative of science's ongoing struggle for relevance and significance. Nutrition science is at the forefront of epistemic uncertainty, since nutritional expertise is claimed by many and that expertise is in turn recognized by many. The case of Verburgh's *Food Hourglass* is interesting, first, because it is the most visible credibility contest between a diet author and the scientific establishment in over a decade in the Dutch language area (with Sonja Bakker preceding him, in the first years of this millennium) and, second, because it enticed fierce and active responses from Flemish and Dutch nutritional scientists in professional and public forums. *The Food Hourglass* is located at the highly contested end of the aforementioned credibility spectrum.

To understand how Verburgh built credibility, we will first review some of the relevant literature on credibility in (nutrition) science and subsequently discuss data collection and methodology. We then present the most salient ingredients to Verburgh's credibility engineering strategy and finish with a general discussion and conclusions on dietary credibility.

## Credibility

The history and sociology of science have taught us that the credibility of a claim is not the direct result of its content. Credibility is a feature of a claim that has to be built, engineered, and constructed, and as a result it takes a lot of work, varies in its success rate, and—importantly—requires maintenance. Scientific claims garner credibility through a stylized process of review, publication, citation, and adoption into the general consensus—sometimes over many years. Also known as the credibility cycle, this process explains how a scientist has to invest time, money, and other resources into the conduct of research, translating the resources into data. These data support publications, which are hopefully read and cited by peers, thereby creating recognition and prestige. New or increased recognition can be translated into new funding, new resources, which will allow the cycle to start all over again (Latour & Woolgar, 1979). Others have expanded the cycle to allow for the inclusion of, for example, patents (Packer & Webster, 1996) or industrial inquiry (Lehenkari, 2003; Penders & Nelis, 2011).

Knorr-Cetina (1982) and Lehenkari (2003) argue that credibility is not an intrinsic and stable feature of scientific work but is constantly negotiated and modified in the mutual interaction between scientists and actors outside the scientific community. Credibility can be achieved through diverse means, including but not limited to scientific arguments, material entities, and mass media representations (Lehenkari, 2003). Studying credibility is thus a study of the

social context of a claim: its origin, as well as its content. In fact, Shapin (1995) lists three characteristics for the study of credibility in science. The first is the realization that it is not the truth that makes claims credible but rather the credibility engineering work that has gone into them. Second, there is no real limit to the considerations that may contribute to, or limit, the credibility of a (scientific) claim. Third, there is no overarching theory explaining the origins and workings of credibility, thus making each study unique and diverse (Shapin, 1995).

When we direct our attention to nutrition and diet writing, alternative credibility engineering strategies directed at different audiences present themselves; these differ from the strategies dominant in academia. Verburgh, like most diet authors, works mainly in what Collins and Pinch (1979) call the contingent forum, outside the formal boundaries of (academic) science. This forum is associated with different (and diverse) publics and shifting roles and appreciations of expertise. For instance, we increasingly appreciate that expertise also exists outside mainstream scientific communities. However, it remains difficult to assess the content of that expertise and active contestations of dominant expertise may increase perceived uncertainties (Evans & Collins, 2007), opening up epistemic room for maneuvering for those promoting alternative readings of, for instance, healthy diet.

For example, many diet authors use a strategy in which they introduce characters the audience can relate to, allowing for a “metaphorical extension” (Shapin, 2007) onto oneself. Some are even explicit about their own struggles with eating and dieting. In the process, they demonstrate a clear set of norms and values and aim for an audience that shares these (Kahan, 2010). That does not mean that all diet authors are unscientific or that no science is presented in their books. However, it is often positioned in opposition to the dominant scientific consensus in an active disavowal of formal expertise, as in the case of popular diet authors Dr. Atkins and Dr. Agaston (South Beach; Shapin, 2007), or it is actively pushed into the background, as in the case of Sonja Bakker (Penders, 2012).

Despite regular critique, scientists are among the most credible sources of knowledge (Gieryn, 1999). Nevertheless, being attributed expertise, having the right academic affiliation, and producing knowledge adhering to all the norms guiding proper research often may not be enough to produce credible claims. Perry, Mata, and Gieryn (2007) argue that if science does not suffice anymore, professionals seek out alternative trajectories to build credibility for their claims: “At the same time, they exploit personal identities and embodied subjectivities as additional sources of authenticity and credibility” (p. 26). However, in the dietary marketplace, diet authors easily outsell nutrition scientists writing for a general audience, even if the latter attempts to adopt the former’s style of credibility engineering (Penders, 2014).

Diet authors such as Verburgh are involved in endless “credibility contests” with others invested in dietetic matters, including nutrition scientists (Gieryn, 1999). Both are claim makers, attempting to gather support for their particular claims (Best, 2008). While formal state-backed dietary guidelines are supposed to target everybody, diet authors hold different ambitions and target a public already committed and interested in the issue.<sup>1</sup> Those seeking out nutritional expertise—because they want to live healthily or lose weight—recognize the heterogeneity that characterizes nutrition science. While some suggest that such a thing as scientific consensus exists, others see disagreement and blame formal experts for it, because of their inability to deal with complexity, expert incompetence, or even expert bias (Dieckmann et al., 2015). Despite these changing and conflicting views on the content of claims and expertise, many continue to have faith that genuine expertise exists somewhere (Shapin, 2007). Finding it is a struggle since media representations usually lack evaluations of different (scientific or nonscientific) expertise (Boyce, 2006).

If, for instance, formal nutrition scientists continue to contradict one another, then another source of nutritional expertise will be sought out, inside or outside the established structures of formal expertise. In this article, we do not focus on the content of expertise, or different expertise levels, as they relate to one another or are assessed by peers.<sup>2</sup> Rather, we focus on how expertise is positioned as credible or trustworthy, specifically in the context of claims about healthy eating. In this line of reasoning, it is not the size or content of the expertise or claims that constructs social reality but rather the persuasive ability of different actors to engineer credit for themselves and their position (Best, 2008), the allies they gather, and the networks they can build (Latour, 1987). The credibility of science and of scientists is not a matter of fact; it is a matter of concern (Latour, 2004) for the scientists themselves, for society, and for social theorists.

Furthermore, Verburgh’s book and arguments need to be placed in a context of growing epistemic insecurity, a culture in which the authority of science is being eroded, its claims are forever contested, and alternative knowledge claims are abundant (Harambam & Aupers, 2014) and also in the context of political distrust, in which association with authority confers doubt, rather than credibility (Zhang, 2015).

## Data Collection

Our approach to the study of credibility of *The Food Hourglass* has been a qualitative one. We performed an in-depth study of the case in which we focused on Verburgh’s activities to build credibility for himself as an expert

and for his claims. Opting for a relational perspective of expertise, this meant that we collected data highlighting the relationship between Verburgh and others who construct or deconstruct his expertise. To that end, we have collected three types of data.

### Data

First, there is the full typescript of *The Food Hourglass*. We have read the book in detail, including other accompanying claims by Verburgh, as uttered in interviews or on his website. Second, we have studied secondary texts and media evaluating *The Food Hourglass*, published between the launch of the book in 2012 and the end of 2013. These mostly stem from Dutch and Flemish newspapers and websites, as well as from Dutch and Flemish radio and TV. As the focus of this article is on the way in which Verburgh builds credibility for himself, we have selected only sources to which Verburgh responds, either through being quoted in the text or through a response of his own-written or on TV. An initial search of newspaper and magazine articles in the April 2012 to end 2013 period yielded 261 results for “food hourglass” (original search in Dutch: *voedselzandloper*) and “Kris Verburgh” keyword searches. Most of these articles merely mention the book, either because it is in the bestseller list or because of its novelty. Many articles are also duplicates or near duplicates appearing in different newspapers or relate to a “gluten scare” that was prominent in popular food press in 2012 and 2013. After close inspection of the content of the articles, 31 fit our criteria in the sense that they are part of an ongoing dialogue between Verburgh and his critics or supporters. Seven articles are from the Flemish newspaper *De Morgen* and seven from the Dutch newspaper *Volkskrant*; the remaining articles are distributed among many (regional) Dutch and Flemish newspapers and magazines. On top of this, we watched three TV appearances and listened to two radio interviews.

Third, the first author conducted 11 semistructured interviews with biomedical and nutritional professionals involved with *The Food Hourglass* case, as well as an interview with Verburgh himself. The other interviewees were selected because they have a strong view on the book and/or Verburgh and have voiced it publically, either through endorsements on the cover of the book or in the public debate in first year after the book’s publication as endorsers or as key critics. As a result, they participated actively in Verburgh’s (de)construction as an expert.

### Respondents

Including Verburgh, 20 participants were invited to participate (Verburgh, 9 endorsers, and 10 critics) and 11 responded positively (Verburgh, 5 endorsers,

and 5 critics). All experts are highly educated professionals working at universities, hospitals, clinics, or governmental institutes. The five proponents are two researchers, one emeritus professor, and two physicians. The five opponents are two researchers, one physician-researcher, a representative of Belgian general practitioners, and a Belgian federal policy advisor. All interviews were conducted in March and April of 2013, lasted 60 minutes on average, and were digitally recorded and transcribed *ad verbatim* afterward. All interviews took place at a location selected by the respondents, either their place of work or their homes in Belgium and the Netherlands, with the exception of two, which were conducted through Skype due to logistical issues. One interview was conducted in the presence of a second representative from the same institute, as requested by the respondent. The semistructured interviews did not strongly adhere to a fixed questionnaire but instead aimed to interfere as little as possible with the narrative flow. The interviewer did ensure that the following themes were discussed (1) relevance of relationships with public, peers, and critics; (2) distribution and gathering of credit; (3) motivations to participate in the public debate; and (4) values and valuation by peers and publics. All interviews were conducted in Flemish (Dutch), and only the quotes and fragments that appear here were translated by the authors.

## *Analysis*

All interview data were analyzed in an iterative process in which data were coded and categorized through an open coding process, supplemented with a few sensitizing concepts/dimensions associated with credibility (Bowen, 2006), which were drawn from previous studies by us and others (Freidson, 1988; Lehenkari, 2003; Penders & Van Dam, 2012). These sensitizing concepts guided the analysis and aided in recognition of relational elements in the interview transcripts, that is, instances in which interviewees referred to other stakeholders, relevant groups, competing experts, views, claims, and the envisioned recipients of claims. We used five sensitizing concepts related to credibility, namely, (1) active articulations of sources and source selection, (2) active articulations of public relevance or problem-oriented character, (3) active engagement with the framing of a dietary issue, (4) active articulations of the audience, and (5) evaluations of others' credibility. In the second step, highlighted text fragments were descriptively coded based on the exact stakeholders, sources, associations, and so on they identified. Codes were subsequently consolidated by the construction of a hierarchic tree of codes and by grouping subcodes together, until the most salient elements in credibility engineering qualities arose. Sensitizing concepts were selected by both authors. Initial coding was done by ML and code consolidating decisions were made together. All empirical material, as well as all

transcripts and codes, were available to both authors immediately after collection and remain available.

*The Food Hourglass* typescript and the secondary texts by Verburgh were reanalyzed using the aforementioned consolidated set of codes. We refrain from offering code frequencies since we share Ritchie, Lewis, McNaughton Nicholls, and Ormston's (2013) view that "any numerical [. . .] inference based on qualitative research is at best misleading and at worst erroneous" (p. 379) and instead mobilize the analysis to focus on the narrative reconstruction of *how* Verburgh built credibility.

## **The Food Hourglass Diet in Context**

*The Food Hourglass* has initiated substantial controversy. In this section, we briefly highlight how *The Food Hourglass*' dietary advice relates to the dominant dietary guidelines it opposes—Belgian and Dutch dietary recommendations, as well as the U.S. dietary guidelines, and other diets argued to resemble the food hourglass diet.

*The Food Hourglass* is written by the Belgian medical doctor and researcher Kris Verburgh. The goal of the book is to challenge the current "myths" and explain how nutrition truly influences your health. In order to achieve this, Verburgh emphasizes the importance of nutrition and elaborates on how specific nutrients/food groups can influence the development of certain diseases. The book challenges conventional ideas about nutrition and presents an alternative view based on three basic principles (1) sugars are not merely unhealthy—they are *very* unhealthy, (2) be careful with protein (and protein-rich diets), and (3) fats are healthier than assumed (pp. 45-116). These principles are fundamentally different from current dietary recommendations in the Netherlands, Belgium, and other countries like the United States.

The Dutch dietary recommendations are presented through a plate-shaped model, which is divided into five parts representing the portion size of each food group as recommended in a healthy diet. The two biggest parts of the plate are equal in size and consist of vegetables and fruits, on one hand, and bread, pasta, potatoes, and legumes, on the other hand. The two second largest parts are also equally sized and consist of a section for water and other drinks, and a dairy, meat, fish, eggs, and meat replacements section. The fifth and smallest part represents fats and oils (Breedveld & Postma-Smeets, n.d.).<sup>3</sup> In Belgium, recommendations are communicated through a pyramid, called the Active Food Triangle. Here, the bottom and largest level displays water and other drinks, followed by grains and potatoes, and vegetables and fruits. The fourth level represents dairy, meat (replacements), fish and eggs, the fifth level oils and fats, and the smallest level is displayed as "other"

(Vanhouwaert, 2012). Although there are some differences in presentation and the food groups that are included in the models from these two countries, they are similar in terms of the relative amounts of vegetables, fruits, grains, and dairy they recommend.

In the United States, the American Food Guide Pyramid, released by the U.S. Department of Agriculture in 1992, was replaced in 2005 by MyPyramid. Subsequently, MyPlate replaced MyPyramid in 2011. MyPlate is part of a larger communication initiative based on the Dietary Guidelines for Americans, intended to help consumers make better food choices. MyPlate illustrates the five food groups using a mealtime visual. These groups are, in order of recommended amount, vegetables and grains, protein and fruits, and dairy (U.S. Department of Agriculture & U.S. Department of Health and Human Services, 2010).

Verburgh's alternative model is shaped as an hourglass and is presented in the book as a substitute for the Active Food Triangle. The model is not only shaped differently but also based on a different underlying vision of nutrition. The recommendations are not congruent with and at some points even oppose the current governmental dietary guidelines. The upper half of the hourglass lists the food Verburgh deems unhealthy, which would lead to weight gain and increased ageing. The lower half lists the healthy food items that could lead to weight loss or decrease ageing and are suggested as replacements for their counterparts in the upper half. As well as the different visualization, the content is significantly different from government-backed guidelines.

The biggest difference is the recommendation of bread and grain products. Verburgh does not recommend consumption of bread and grain, while this is among the most important food groups in the other models. Verburgh argues that bread and pasta should be replaced by oatmeal, legumes, mushrooms, fruit, and vegetables. In his book, Verburgh claims that sugar and carbohydrates should be avoided as they lead to increased weight, accelerated aging, and increased likelihood to develop cancer (p. 45). This is followed by a description of how carbohydrate consumption leads to increased blood glucose levels, subsequently increasing insulin levels in the body. Consequently, the body increases the production of an enzyme called insulin-like growth factor (IGF). It is claimed that this enzyme accelerates the ageing processes in our body and is involved in cancer growth (pp. 45-60).

Even though the book advocates decreased consumption of carbohydrates, Verburgh dissociates himself and his model from other low-carb diets like the well-known Atkins diet because these diets tend to advocate replacing carbohydrates with proteins. These proteins are often consumed through meat and dairy. In contrast, Verburgh recommends limiting milk, yoghurt, and red meat consumption. In that respect, *The Food Hourglass* also differs significantly

from dietary recommendations in the Netherlands, Belgium and the United States, where dairy products are viewed as essential elements in a healthy diet by every model described above except *The Food Hourglass*. Verburgh argues that high protein consumption will lead to increased ageing and associated diseases (p. 73). In this context, he states that although Atkins followers lose weight, they will also lose health (p. 75). According to *The Food Hourglass*, high-protein diets are unhealthy as they are associated with Alzheimer's, Parkinson's amyloidosis, osteoporosis, cancer, decreased digestion, and general ageing (pp. 75-79).

Similarly, he argues that his model is also different from the Paleo diet. Even though the Paleo diet is similar in terms of recommending decreased carbohydrate and increase fruit and vegetable intake, one of the key principles of the Paleo diet is to eat more animal meat compared to the typical American diet. Also, legumes are not part of the Paleo diet (Cordain, 2010). This is opposed to Verburgh's view that we should lower meat consumption and increase legumes intake as part of a healthy diet. Despite the critical view on protein consumption, *The Food Hourglass* does not recommend banishing all meat and dairy. The book advises consumption of small amounts of (nonred) meat, preferably poultry, and cheese is also among the recommended food items (p. 39).

## Ingredients of Credibility

The most salient characteristics of Verburgh's pattern of credibility engineering can be grouped under three headings. The first is the establishment of credibility through enlisting authority, both scientific and social. The second is the establishment of moral character by claiming a superior moral position and positioning the established nutritional experts—the other contestants for credibility—as corrupted. The final is the role of the dissident or underdog, taking further advantage of existing distrust or doubt vis-à-vis the established dietetic positions and established authority in general.

### Authority

Science and medicine wield a history of cultural authority. Although many point to the existence of a legitimacy problem—in which people increasingly turn elsewhere for “a set of values that would improve everyday life” (Gauchat, 2011, p. 752)—scientists continue to be credible sources of expertise. Kris Verburgh actively enlists his scientific authority and the corresponding formal qualifications. For instance, the back cover of *The Food Hourglass* introduces him as a “medical doctor and researcher” and

highlights that he published a (popular) scientific book at the age of 17. In an interview in the magazine *Zeno*, he boasts: “As a child, I read Tolstoy and Dostoyevsky” (translated from original, quoted in Van Puymbroeck, 2012).

The book is riddled with subtle and less subtle references to Verburgh’s qualifications as a doctor and health scientist. These vary from first-person statements, such as “[. . .] I, [. . .] as a doctor and researcher” (p. 7), to brief personal narratives about the power and limits of science and medicine: “As a young medical student I regularly witnessed patients entering the doctor’s office full of hope [. . .] only to learn that their specific problem could not be treated easily” (pp. 10-11). These narratives support his individual authority by positioning him as a scientist, but they also allow readers to identify themselves with the author (cf. Penders, 2014; Shapin, 2007).

As well as positioning himself as a scientist, Verburgh also mobilizes the cultural authority of science as a whole. He explicitly states that “*The Food Hourglass* is based on high quality scientific research and overlaps with insights from diverse disciplines [. . .]” (p. 40). The book itself is filled with references to concrete studies. Verburgh has included 267 references to published studies and devotes a lot of attention to studies by (mainly American) experts. This is not merely our reconstruction but also a position he actively voices himself:

[The book] contains lots of references for those who are interested to read more. As physicians, we have knowledge from certain basal mechanisms in the body and if you read the book it all makes sense. For them, the model is interesting and logical. The facts speak for themselves in that respect. [So do] the quotes I have included from world experts like Walter Willett and Cynthia Kenyon. I think it is very interesting that I give the floor to those known experts who reinforce the facts. (Interview 1, March 20, 2013)

These experts are present not only through their scientific work but, again, also through narratives. The aforementioned Cynthia Kenyon is reported to have said, after eliminating carbs from her diet: “I feel a lot better. I am thin—I weigh as much as when I went to college. I feel amazing, as if I were a child again. It is incredible.” (p. 46). Verburgh argues that these experts and their research ought to be the main source of information about nutrition.

When we cast our gaze wider than the text of the book, further sources of authority supporting *The Food Hourglass*’ credibility become visible. Verburgh’s work was and is publicly endorsed by prominent Belgians—scientists as well as celebrities. Their reasons for supporting Verburgh and his claims differ. Some, for instance, were personally invited by the author, while others claim to support the cause more than the person. One nutritional

professional told us: “I participated to reveal the truth, nothing but the truth. Not to support the author, since I have no friendly relationship with him, although I do have sympathy for what he tries to accomplish.”<sup>4</sup>

Verburgh does not only enlist the authority of himself, science in general, scientists in particular, and a variety of endorsers. He also concretely challenges the authority of science, scientists, and scientific institutes. For instance, he argues that the science supporting existing models of dietary recommendation (the food triangle in Belgium and the food wheel in the Netherlands) are obsolete:

The current food triangle and wheel are outdated. You may wonder why they are still recommended and distributed everywhere. To me, being educated and having matured in medicine, this is no surprise. [. . .] Scientific insights often come trickling into society at an awfully slow pace. (p. 33)

The science that is used for these existing dietary guidelines and nutritional recommendations is, according to Verburgh, faulty, imperfect, and deficient. It is outdated, and the medical and nutritional studies on which dietary advice was built used samples that were too small or not representative. Also, Verburgh argues, his food hourglass is based not only on nutritional science but also on insights “from medicine, biogerontology (the study of ageing), biochemistry and biology (evolution of man)” (p. 43). There is a lot of science in Verburgh’s book—but it is a different subset of science from that wielded by the scientific establishment. Verburgh positions his selection of studies as alternative (and superior) to the dominant scientific infrastructure in an active disavowal of nutritional orthodoxy, in a manner similar to, for example, that of popular diet authors Dr. Atkins and Dr. Agoston (Shapin, 2007).

Verburgh builds credibility through authority—the authority that comes with his credentials, the cultural authority of science in general, as well as the authority of concrete prominent scientists. He builds this credibility through the active inclusion of science in his argument, directly or narratively, which he further extends by arguing that he relies on the authority of science, but—as a dissident—he claims to avoid the trap of orthodoxy.

Avoiding orthodoxy may also mean turning one’s gaze elsewhere. Verburgh explicitly did so by mobilizing other disciplines as well as nutrition science, but he also does so by consulting sources of expertise from elsewhere. In “Pauw and Witteman,” a Dutch TV show, he argues that his book “is based upon positions of large foreign universities and foreign institutions.”<sup>5</sup> In this show he refers to Austrian dietary guidelines and to universities such as Harvard, all of which present indications or evidence that contrast with Dutch and Flemish dietary practices.

## *Moral Character*

Orthodoxy is not the only reason why Verburgh distances himself and the content of his dietary advice from the scientific establishment. The content of established, government-issued dietary advice is compromised by another undue influence:

One of the reasons the outdated food triangle and wheel are still everywhere, is that the agriculture, meat and milk industry strongly lobby with government to maintain the current guidelines: models with a strong emphasis on grains, meat and dairy products—products of the industries. (p. 33)

This corruption is not limited to the continuation of the current dietary advice, Verburgh argues, but is part of its origin: “The grain-, meat- and dairy industry not only guard the triangle and wheel, they also had an important influence in its creation.” (pp. 33-35). He repeats this position regularly in interviews (printed and on TV) in many variations. Verburgh also argues that this corruption of dietary advice—of nutrition science—has found its way into the core positions of its practitioners. In a printed interview, he says, “I wanted to have my work, which is based on hundreds of scientific studies, to be checked by a dietician. That did not work. They swear by the food triangle, which is similar to the American food pyramid” (translated from original, quoted in Van Puymbroeck, 2012).

After this, he repeats that the triangle and pyramid have been based on industry-supported studies, including, for instance, the large Dutch dairy industry. One of our interviewees supports Verburgh’s position and argues that “[e]ven certain scientific consensus that exists is to some extent indirectly also a consensus from lobbying industries and scientists, with all due respect.”<sup>6</sup> Verburgh actively draws the interests of other scientists into question, whether it is their interest in the status quo or their financial interest. Andreassen (2009) has demonstrated that people “base attributions of credibility on assumptions about the societal interests of the ‘experts’” (p. 37). Verburgh constructs orthodoxy to be both an epistemological problem and a moral problem, and he argues that he is left with no choice but to advise against the consumption of milk and bread—advice built on science, Verburgh claims, as well as on his moral character.

His moral character also urges him to respect his audience of choice. Verburgh writes in his book and utters in almost every interview and during every TV appearance the suggestions that others—unlike him—do not take the public seriously. In addition to adherence to orthodoxy and problems with scientific integrity, the reason why most dietary guidelines are not as good as

they should be is that those providing advice make things too simple: The advice is “oversimplified”<sup>7</sup> and “watered down.”<sup>8</sup>

### Dissidence

Alongside Verburgh building credibility for his arguments scientifically and narratively (on various authorities), questioning the integrity of those guarding the status quo, and reaching out to his audience, his credibility is also questioned or even attacked. Three aspects of Verburgh’s persona are targeted. The first is his expertise, the second is his moral character, and the third is his role in the debate on nutrition.

One of our interviewees reflects on Verburgh’s previous publications and finds his oeuvre to be unconvincing: “First he was an expert in the universe, now he suddenly is an expert in nutrition. Well, that harms his credibility tremendously [. . .].”<sup>9</sup> In a similar vein, on live Dutch television, Midas Dekkers, another Dutch popular science writer, called Verburgh a “charlatan.”<sup>10</sup> In an early review of his book, called *An Intellectually Dishonest Book*, Belgian food writer Etienne argues that Verburgh breaks his own rules by “suggesting that his book contains the truth and that the rest are a collection of frauds, amateurs and ignorants who do not know the right of it. Verburgh positions himself as the diet gurus he loathes” (Etienne, 2012). One of our interviewees critiques Verburgh for the way he treats his sources too:

The American school of Walter Willett is repeatedly quoted. I know Walter Willett personally, I hosted presentations with him around the world. He is not the one who propagates a new nutritional strategy for the American public. He treats patients, just like we do. It seems like the author tries to translate Willett’s treatment strategy to the general public, but Willett’s research involves morbidly obese people. (Interview 4, April 10, 2013)

Second, Verburgh’s moral character is called into question. One of our interviewees argues that Verburgh’s “[c]redibility is undermined because he has had a direct personal gain from something. It is not because you make profit that you are definitely not credible, but it does put your interests in danger.”<sup>11</sup> Verburgh, however, embraces this critique and argues that his book’s sales figures confirm and strengthen his credibility, since it signals that his book is recommended by readers to others based on positive evaluations.<sup>12</sup>

Third, reflecting on the public debate on *The Food Hourglass* and Kris Verburgh’s role, the Dutch philosopher Wagemans criticizes Verburgh’s debating style, which he labels “mudslinging.” He argues that Verburgh’s

critique on orthodoxy and commercial bias is in fact undermining the credibility of all scientists—including Verburgh’s own (Wagemans, 2013).

Unwillingly assisting Verburgh in his construction of the self as dissident is his alma mater, the University of Antwerp, where he did his medical training. A few months after the book appeared, the faculties of medicine and health sciences unanimously backed the decision to publicly distance themselves from the book, calling it “dangerous” and “turning all national and international dietary recommendations upside down,” expressing their unwillingness “to be associated with a piece of work that is potentially dangerous to public health” (translated from Dutch, Mast, 2012). Verburgh embraced these critiques wholeheartedly and responded by claiming full responsibility for the content of the book, it being based on insights that simply exist out there. He expanded on this during our interview, in which he argues this his dismissal will help build credibility: “In the end, the public will know better. Hearing conventionally trained dieticians or physicians call the book dangerous will eventually lead people to start questioning the conventional food authorities.”<sup>13</sup>

Verburgh continuously defended himself in newspapers and on television in both Belgium and the Netherlands, through his own website, social media presence, and assorted published texts. These responses, intended to defend, maintain, or restore (depending on one’s position) his credibility and that of his claims, continue to refer to the social authority of science and medicine, the dominance of orthodoxy and corruption in those that defend the status quo, and his position as opposing that status quo—perhaps against all odds.

## Discussion

The credibility contests raging around all dietetic issues are fierce, and the stakes are high. There are many contenders for credibility in this arena, ranging from diet authors (or gurus) on the one hand to scientists on the other—with each side claiming expertise. Following Knorr-Cetina (1982) and Lehenkari (2003), who argue that credibility is constantly negotiated and modified in interaction between scientists and others, we have shown the three legs of Verburgh’s credibilizing strategies, that is, authority, integrity, and dissidence, to be exactly that—starting points for interaction, negotiation, and mediation. These negotiations cannot be separated from the negotiations on Verburgh’s status as an expert (Andreasen, 2009; van Rijswoud, 2010, 2014).

Most of Verburgh’s opponents qualify the current status of dietary guidelines as unproblematic. In contrast, Verburgh diagnoses the status quo as deeply troublesome. In the vocabulary of Joel Best’s (2008) work on social

problems, Verburgh is actively foregrounding the troublesome conditions that assist him in arousing concern for the issue and help gather support for his unconventional claims. Other experts are calling Verburgh out on these exaggerations. For instance, accusations that Verburgh is a “charlatan” or that his dietary model is “dangerous” are elements of scientific boundary work (Gieryn, 1983, 1999), which, in a culture of epistemic insecurity and erosion of the cultural authority of science, may (perhaps paradoxically) grant credibility rather than restrict it (Harambam & Aupers, 2014).

Verburgh has enlisted the social and cultural authority of science by positioning himself as a member of this elite group and by explicitly enlisting the authority of other scientists by citing their work or quoting them ad verbatim in his book or elsewhere. However, he aims to challenge the status quo by turning his glance away from orthodoxy and toward newer, more relevant insights. He also has actively questioned the independence and integrity of science in general and of a number of governmental agencies issuing dietary advice in particular. He thus actively positions himself outside the dominant scientific paradigm, yet enlists science and scientific arguments.

How can we understand this apparently paradoxical position? To that end, we must differentiate between the construction of credibility *in* science and the credibility *of* science—or, more concretely in the context of this case, the credibility of Verburgh’s arguments, claims, and his book to eaters on the one hand, and the credibility of Verburgh’s arguments, claims, and book to those studying nutrition and/or compiling dietary advice in Belgium and the Netherlands on the other. Although intricately connected, these credibilities differ significantly in their composition and genesis.

Since Verburgh labels much of nutrition science as orthodoxy, he is distancing himself from traditional dietary knowledge makers—whether academics or governmental officials. His active disavowal of formal expertise, positioning himself outside or above nutrition science, builds credibility among the buyers of his book but actively *at the expense* of credibility vis-à-vis peer knowledge producers. In a similar vein, his harsh condemnation of public-private collaboration in nutrition science finds a willing ear among the skeptical public, yet is disconnected from the reality of nutritional and dietary research. In fact, scientists often draw credibility from the collaboration in which they engage (Parker, Vermeulen, & Penders, 2010; Penders, Vermeulen, & Parker, 2015)—both public and private. Verburgh thus again builds public credibility at the expense of peer credibility. In fact, Verburgh’s dissidence fits to a large extent with Jauho’s (2014) description of the *competent* audience of low-carbohydrate, high-fat diets—actively voicing discontent and distrusting dogmatic science and the vested interests of nutrition science

(Jauho, 2014)—and even borrows elements from credibility construction in conspiracy theory cases (Harambam & Aupers, 2014).

## **Dissidence and the Power of Discontent**

In this time of epistemic uncertainty, in which publics as well as “experts” find it increasingly difficult to evaluate scientific claims, determine their value, and differentiate between growing amounts of competing claims of various origins, the status of expertise is shifting. That messages cater to a carefully chosen public is nothing new in science communication. This analysis adds a parasitic dimension to the construction of expertise and the credibility of that expertise, actively draining credit from another relationship. It illustrates that scientific expertise is not universal but local, limited, and situated in time and space (Haraway, 1991; Latour, 2005) and largely dependent on persuasion. Verburgh requires formal experts, the voices of the status quo to renounce his expertise, in order to build it elsewhere. Extremely fierce credibility contests contribute to the situated character of expertise and evaluations of its credibility.

Such extremely fierce interactions, starring various accusations and counteraccusations (mudslinging, as some called it), present a risk to the credibility of dietary expertise as a whole, and especially to how it is constructed. The nutritional case presented here also points to a noteworthy difference in science communication by Verburgh and other dissidents in the medical contexts. The parasitic relationship between the dissident’s credibility and that of the status quo, the questioning of the establishment’s moral character, and Verburgh’s articulation of the self as the only “true” expert align with communication by dissidents in other heated debates, for example, AIDS denialism. Aligning oneself with a dissident, such as Verburgh (in the case of the controversy over healthy nutrition) or Duesberg (in the case of the controversy over the relationship between HIV and AIDS; Duesberg, 1989; Smith & Novella, 2007; Treichler, 1999), allows the formation of a cultural space to challenge power and to challenge the status quo (Mackenzie, 2011).

In the case of healthy eating in Belgium and in the Netherlands (just as in most other countries), government involvement is direct and very visible. The government commissions reports and public health strategies and designs and executes communication strategies on healthy eating. Discontent with the institutions that present dietary guidelines<sup>14</sup> informs communication strategies and credibility building by dietary writers including Verburgh. This is in line with Zhang’s (2015) study of highly politicized contexts, which shows that the absence of formal endorsements, affiliations, and more will help build credibility with those seeking to challenge authority—to

challenge the status quo. In Verburgh's case, his low credibility among established nutrition scientists and government representatives is not the side effect of a choice of audience; rather it is itself a choice, fuel for the construction of credibility with those struggling with formal dietary advice and who wish to challenge the status quo through the small but powerful act of "rebellious" healthy eating.

Wide public discontent, fierce credibility contests, and active disavowals of the status quo are not merely characteristics of debates about what to eat. Similar dynamics also apply to debates in other social and political arenas, for instance, in populist political campaigns, where credibility is parasitized among the "elite" in order to build it among the "working class" while harming the credibility of politics as a whole through rampant polarization.<sup>15</sup> Campaigning in politics and science communication are not to be treated as equals, but credibility-engineering strategies from the former are emerging in the latter—in modest ways. Verburgh has moved on to new work on slowing ageing (Verburgh, 2015), using a similar communication strategy, but he has left us with updated view on the relationship between expertise, credibility, and the power of dissent and discontent.

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### **Notes**

1. For a critical discussion of the division (or stratification) of the public, see, for example, Hess (2015).

2. Such a realist position on expertise is recognizable in the prominent work of, for example, Collins and Evans (2002, 2007). A more relational perspective on expertise, in line with the views offered in this article, is offered by Van Rijswoud (2010, 2014).
3. During the revision of this article, late March 2016, a new “Food Disc” was released. It deviated from the one presented here in a few aspects. However, since the previous version of the Food Disc is the one Verburgh rejected, it is the one that is relevant here.
4. Interview 2, March 19, 2013.
5. Pauw en Witteman, September 27, 2013, time stamp 00:52 at <http://pauwenwitteman.vara.nl/media/300883>
6. Interview 8, March 25, 2013.
7. “Too simple [. . .] (too little difference between good and bad fats, red and white meat, white rice and full rice, normal tea and green tea, or omega-6- and omega-3-rich oils)” (p. 43).
8. Appearance on Dutch TV, Pauw and Witteman, April 21, 2014.
9. Interview 4, April 10, 2013.
10. Pauw and Witteman, April 21, 2014; one of many similar ad hominem critiques (cf. Collins & Pinch, 1979).
11. Interview 6, March 7, 2013.
12. Interview 1, March 20, 2013.
13. Interview 1, March 20, 2013.
14. Van De Walle, Van Roosbroek, and Bouckaert (2008) argue that distrust in government is fluctuating. Trust and distrust are, however, not opposites on the same spectrum but separate constructs (Van De Walle & Six, 2014). How and why they fluctuate and what causes them to rise or fall are largely unknown.
15. In his excellent critique of populism, Van Reybrouck (2008) argues that populism is a symptom of the underlying problem that a significant part of the electorate is no longer represented by politics. He argues that *less* populism is not the solution, since it does not address the underlying problem. What we need is *better* populism.

## References

- Andreasen, M. (2009). Who’s credible? Expressions of consensus and conflict in focus groups about DNA patenting. *BioSocieties*, 4, 25-43.
- Best, J. (2008). *Social problems*. New York, NY: W. W. Norton.
- Bowen, G. A. (2006). Grounded theory and sensitizing concepts. *International Journal of Qualitative Methods*, 5, 1-9.
- Boyce, T. (2006). Journalism and expertise. *Journalism Studies*, 7, 889-906.
- Breedveld, B. C., & Postma-Smeets, A. J. P. G. (n.d.). *Factsheet: Gezonde basisvoeding met de Schijf van Vijf* [Factsheet: Healthy basic nutrition with the food disc]. Retrieved from <http://www.voedingscentrum.nl/nl/pers/factsheets.aspx>
- Collins, H. M., & Evans, R. (2002). The third wave of science studies: Studies of expertise and experience. *Social Studies of Science*, 32, 235-296.

- Collins, H. M., & Evans, R. (2007). *Rethinking expertise*. Chicago, IL: University of Chicago Press.
- Collins, H. M., & Pinch, T. J. (1979). The construction of the paranormal. Nothing unscientific is happening. In R. Wallis (Ed.), *On the margins of science: The social construction of rejected knowledge* (Sociological review monographs, 27; pp. 237-270). Keele, England: Brooks.
- Cordain, L. (2010). *The Paleo diet: Lose weight and get healthy by eating the foods you were designed to eat*. New York, NY: Wiley.
- Dieckmann, N. F., Johnson, B. B., Gregory, R., Mayorga, M., Han, P. K. J., & Slovic, P. (2015). Public perceptions of expert disagreement: Bias and incompetence or a complex and random world? *Public Understanding of Science*. Advance online publication. doi:10.1177/0963662515603271
- Duesberg, P. H. (1989). Human immunodeficiency virus and acquired immunodeficiency syndrome: Correlation but not causation. *Proceedings of the National Academy of Sciences*, 86, 755-764.
- Etienne, J. (2012). *De voedselzandloper: Een intellectueel oneerlijk boek?* [The food hourglass: An intellectually dishonest book?]. Retrieved from <http://www.knack.be/nieuws/gezondheid/de-voedselzandloper-een-intellectueel-oneerlijk-boek/article-normal-65802.html>
- Evans, R., & Collins, H. M. (2007). Expertise: From attribute to attribution and back again? In E. Hackett, O. Amsterdamska, M. Lynch & J. Wajcman (Eds.), *The handbook of science and technology studies* (pp. 609-630). Cambridge: MIT Press.
- Freidson, E. (1988). *Profession of medicine: A study of the sociology of applied knowledge*. Chicago, IL: University of Chicago Press.
- Gauchat, G. (2011). The cultural authority of science: Public trust and acceptance of organized science. *Public Understanding of Science*, 20, 751-770.
- Gieryn, T. F. (1983). Boundary work and the demarcation of science from non-science: Strains and interests in professional ideologies of scientists. *American Sociological Review*, 48, 781-795.
- Gieryn, T. F. (1999). *Cultural boundaries of science: Credibility on the line*. Chicago, IL: University of Chicago Press.
- Harambam, J., & Aupers, S. (2014). Contesting epistemic authority: Conspiracy theories on the boundaries of science. *Public Understanding of Science*, 24, 466-480.
- Haraway, D. J. (1991). *Simians, cyborgs and women: The reinvention of nature*. London, England: Free Association Books.
- Hess, D. J. (2015). Public as threats? Integrating science and technology studies (STS) and social movement studies (SMS). *Science as Culture*, 24, 69-82.
- Hilgartner, S. (2000). *Science on stage: Expert advice as public drama*. Stanford, CA: Stanford University Press.
- Jasanoff, S. (2003). (No?) Accounting for expertise. *Science and Public Policy*, 30, 157-162.
- Jauho, M. (2014). The social construction of competence: Conceptions of science and expertise among proponents of the low-carbohydrate high-fat diet in Finland. *Public Understanding of Science*, 25, 332-345.

- Jones, W. E. (2002). Dissident versus loyalist: Which scientists should we trust? *Journal of Value Inquiry*, 36, 511-520.
- Kahan, D. (2010). Fixing the communications failure. *Nature*, 463, 296-297.
- Knorr-Cetina, K. D. (1982). Scientific communities or transepistemic arenas of research? A critique of quasi-economic models of science. *Social Studies of Science*, 12, 101-130.
- Latour, B. (1987). *Science in action: How to follow scientists and engineers through society?* Cambridge, MA: Harvard University Press.
- Latour, B. (2004). Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry*, 30, 225-248.
- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford, England: Oxford University Press.
- Latour, B., & Woolgar, S. (1979). *Laboratory life: The construction of scientific facts*. Princeton, NJ: Princeton University Press.
- Lehenkari, J. (2003). On the borderline of food and drug: Constructing credibility and markets for a functional food product. *Science as Culture*, 12, 499-525.
- Mackenzie, S. (2011). Dissecting the social body: Social inequality through AIDS counter-narratives. *Public Understanding of Science*, 20, 491-505.
- Mast, T. (2012, September 11). UA: De voedselzandloper is gevaarlijk boek [University of Antwerp: The food hourglass is a dangerous book]. *De Morgen*. Retrieved from <http://www.demorgen.be/binnenland/ua-de-voedselzandloper-is-gevaarlijk-boek-b89d0869/>
- Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: Knowledge and the public in an age of uncertainty*. Oxford, England: Blackwell.
- Packer, K., & Webster, A. (1996). Patenting culture in science: Reinventing the scientific wheel of credibility. *Science, Technology, & Human Values*, 21, 427-453.
- Parker, J. N., Vermeulen, N., & Penders, B. (2010). *Collaboration in the new life sciences*. Farnham, England: Ashgate.
- Penders, B. (2012). *De mensen hebben een gezicht nodig* [People need a face][An interview with Sonja Bakker]. In B. Penders & F. Van Dam (Eds.), *Ingrediënten van Geloofwaardigheid: Goed Eten onder de Loep* [Ingredients of credibility: Good food in the spotlight] (pp. 42-46). Amsterdam, Netherlands: Boom Lemma.
- Penders, B. (2014). Mythbusters: Credibilising strategies in popular nutrition books by academics. *Public Understanding of Science*, 23, 903-910.
- Penders, B., & Nelis, A. P. (2011). Credibility engineering in the food industry: Linking science, regulation and marketing in a corporate context. *Science in Context*, 29, 487-515.
- Penders, B., & Van Dam, F. (2012). *Ingrediënten van Geloofwaardigheid: Goed Eten onder de Loep* [Ingredients of credibility: Good food in the spotlight]. Amsterdam, Netherlands: Boom Lemma.
- Penders, B., Vermeulen, N., & Parker, J. N. (2015). *Collaboration across health research and medical care: Healthy collaboration*. Farnham, England: Ashgate.
- Perry, E. M., Mata, J. M., & Gieryn, T. M. (2007, August). *Science and the discursive politics of policy: Examining credibility and policy framing*. Paper presented at the annual Meeting of the American Sociological Association, New York, NY.

- Ritchie, J., Lewis, J., McNaughton Nicholls, C., & Ormston, R. (2013). *Qualitative research practice: A guide for social science students and researchers* (2nd ed). Thousand Oaks: Sage.
- Scrinis, G. (2013). *Nutritionism: The science and politics of dietary advice*. New York, NY: Columbia University Press.
- Shapin, S. (1995). Cordelia's love: Credibility and the social studies of science. *Perspectives on Science*, 3, 255-275.
- Shapin, S. (2007). Expertise, common sense and the Atkins diet. In J. M. Porter & P. W. B. Phillips (Eds.), *Public science in liberal democracy* (pp. 174-193). Toronto, Ontario, Canada: University of Toronto Press.
- Smith, T., & Novella, S. (2007). HIV denial in the internet era. *PLoS Medicine*, 4, e256.
- Treichler, P. A. (1999). *How to have theory in an epidemic: Cultural chronicles of AIDS*. Durham, NC: Duke University Press.
- U.S. Department of Agriculture & U.S. Department of Health and Human Services. (2010). *Dietary guidelines for Americans*. Washington, DC: U.S. Government.
- Van De Walle, S., & Six, F. (2014). Trust and distrust as distinct concepts: Why studying distrust in institutions is important. *Journal of Comparative Policy Analysis*, 16, 158-174.
- Van De Walle, S., Van Roosbroeck, S., & Bouckaert, G. (2008). Trust in the public sector: Is there any evidence for a long-term decline? *International Review of Administrative Sciences*, 74, 45-62.
- Vanhauwaert, E. (2012). *De actieve voedingsdriehoek: Houd je bord in evenwicht* [The active food triangle: Keep your plate balanced]. Leuven, Belgium: Acco.
- Van Puymbroeck, R. (2012, June 30). Lunchen met Kris Verburgh [Lunch with Kris Verburgh]. *De Morgen*. Retrieved from <http://www.voedselzandloper.com/uploads/1/0/5/4/10540270/voedselzandloper.pdf>
- Van Reybrouck, D. (2008). *Pleidooi voor populisme* [A plea for populism]. Amsterdam, Netherlands: Querido.
- van Rijswoud, E. (2010). Virology experts in the boundary zone between science, policy and the public: A biographical analysis. *Minerva*, 48, 145-167.
- van Rijswoud, E. (2014). Shifting expert configurations and the public credibility of science: Boundary work and identity work of hydraulic engineers (1980-2009). *Science in Context*, 27, 531-558.
- Verburgh, K. (2012). *De voedselzandloper. Over afvallen en langer jong blijven* [The food hourglass. On losing weight and staying young longer]. Amsterdam, Netherlands: Bert Bakker.
- Verburgh, K. (2014). *The food hourglass*. New York, NY: Harper.
- Verburgh, K. (2015). *Veroudering vertragen: Het langer jong plan* [Slowing aging: The young-for-longer plan]. Amsterdam, Netherlands: Prometheus Bert Bakker.
- Wagemans, J. (2013, October 17). *Met zijn moddergooierij voedt Kris Verburgh de autoriteitscrisis* [With his mudslinging Kris Verburgh feeds the crisis of authority]. Retrieved from <http://www.volkskrant.nl/opinie/-met-zijn-moddergooierij-voedt-kris-verburgh-de-autoriteitscrisis~a3528597/>

- Weuring, P., & Verburgh, K. (2013). *Het voedselzandloper kookboek*. [The food hourglass cookbook]. Amsterdam, Netherlands: Prometheus Bert Bakker.
- Willett, W. C. (2001). *Eat, drink and be happy: The Harvard Medical School guide to healthy eating*. New York, NY: Free Press.
- Zhang, J. Y. (2015). The “credibility paradox” in China’s science communication: Views from scientific practitioners. *Public Understanding of Science*, 24, 913-927.

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