

New Meat and the Media Conundrum with Nature and Culture

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ABSTRACT: “New meat” is meat obtained either from stem cells or totally synthetically, and promises to drastically reduce pollution and to abolish animal killing, despite raising safety issues. This study analyses how the media have been constructing “new meat” since 2012, the year of the first test–tube hamburger. Peirce (1877) finds four different ways through which people accept new beliefs; they are based either on past models, or on power and economic interests, or on individual accommodation, or on science. Moreover, new meat is a human artefact that aims to replace a natural product, and therefore it raises foundational issues linked to the relationships between Nature and Culture. While old theories see these two concepts as separate and conflicting, this work builds on newer, bio–semiotic perspectives according to which the two concepts are linked to each other by mutual and ever changing relationships. Articles published in online versions of British and American magazines, newspapers and broadcasters have been purposely sampled and semiotically analysed. The results show that the media represent new meat either as a utopian product able to clean the world of evil (pollution, illness, animal suffering, etc.), or as a dystopian food, similar to GM products and continuing the long list of dangerous techno–foods. The utopian representations adopt Peirce’s power–led fixation of belief; instead, the dystopians rely on Peirce’s *a priori* method. Thus, Nature and Culture are still considered as two separate entities in conflict with each other. However, further semiotic analysis of the forms and names that scientists and designers are giving to new meat demonstrate that the new perspectives on Nature and Culture as interacting are slowly entering the field. In conclusion, the newer approach to Nature and Culture is more practiced by scientists and designers, while the media lag behind, still anchored to old schemes.

KEYWORDS: food semiotics; cultured meat; nature and culture; in–vitro meat; Peirce.

1. What is “New Meat”?

This study analyses the way in which “new” forms of meat, technological foods still at an experimental stage, are being constructed in Western society

by the media¹. It follows another article (Buscemi 2014) in which these new forms of meat are seen not as a revolutionary novelty without any link to the past, but as a further step in a long historical process, which began in the Renaissance and has gradually detached the meat we eat from the idea of the living animal.

Since the 1960s, many studies have focused on foods as social constructions, and food has been studied as more than simply something to eat. Since Lévi–Strauss’s (1966) food triangle and Barthes’s (1961) intuition that food is not only a “substance”, but also a “circumstance”, it has widely been acknowledged that what we eat shapes and is shaped by social, cultural, anthropological, political and economic influences, and that it may be considered as a system of signs and codes that are deeply rooted in societies. The new forms of meat that many labs around the world have been testing are here analysed from this perspective. However, before the analysis it is important to explain what these new forms of meat actually are.

First of all, what these new products share is the fact that they have been created to solve the many problems that today meat is considered responsible for. Pollution, illness, animal suffering, and unsustainability are the issues that meat is ever more accused of (Fairlie 2010; Hyslop 2012). What is more, many vegetarian groups oppose meat consumption because it entails the idea of killing animals, and many religions ban meat when it is obtained from animals considered sacred. Already in the past, when technology was not able to deal with these problems, some forward-looking voices foresaw the advent of new forms of meat capable of overcoming these problems. Even Winston Churchill, in 1931, predicted that humanity would produce meat detached from animals, and that techno–meat would be indistinguishable from “real” meat (cited in Specter 2011). Moreover, many science–fiction novels and films have depicted forms of meat which do not imply killing animals. Finally, more realistically many researchers have advanced the idea of eating insects (Fiegi 2013), but actually this would solve the problem of pollution and not the issue of animal killing. In fact, animal killing would be multiplied because of the higher number of insects to be killed than that of cows, pigs, etc.

The impressive breakthrough of science and technology in stem cells and synthetic materials has turned fantasy into reality, and projects about obtaining meat without killing animals are spreading all over the world with varying degrees of advancement. Doctor Mark Post, from the University of Maastricht, on 5 August 2013 created and served in London a hamburger obtained from the stem cells of a cow, after a two–year study. The project

1. This study is based on the paper presented at *Paradoxes of Life*, the 39th annual meeting of the Semiotic Society of America, held in Seattle from 2 to 5 October 2014. The Author wishes to thank all the participants in the panel on food culture that improved the paper with suggestions, comments and critiques.

was financed by Sergey Brin, one of the two founders of Google, and it was calculated that the techno-hamburger cost \$325.000 (Fountain 2013). Differently, Patrick Brown, a former Stanford University staff member, is working on a plant-based burger costing about \$20 each. It is obtained from heme, a component of haemoglobin, (Rusli 2014), and is able “to reduce the human footprint on this planet by 50%” (Hanlon 2012). Moreover, Modern Meadow, a company co-founded by its CEO Andras Forgacs, is working on another version of cultured meat and on cultured-leather products (Griggs 2014), and other scientists are on the verge of developing new forms of meat, also supported by powerful companies. On average, each of these kinds of new meat “needs 99 per cent less land than livestock, between 82 and 96 per cent less water, and produces between 78 and 95 per cent less greenhouse gas” (Connor 2013). Some of these new forms of meat do not imply killing animals at all, while others can produce meat for years from the killing of a sole animal.

Clearly, this is not the place to discuss the scientific issues raised by these new forms of meat, whether or not they are dangerous for human health, and so on. This work, instead, focuses on the way in which Western media are constructing these new foods, their interactions to the traditional concepts of Nature and Culture, and to food as a system of signs (Barthes 1961). The next section focuses on theories and conceptualizations that have supported this analysis.

2. Fixing a New Belief between Nature and Culture

New meat is an almost complete novelty and the media are constructing it from scratch. This means that new meat is, for humans, a new belief that they are discovering and elaborating. In his seminal work *The Fixation of Belief*, Peirce (1877) argues that a new element becomes part of our minds in four different ways. The first way is mostly individual, and has to do with tenacity; each person adapts this belief to a pre-existing mindset, and does not give up following this; the limit of this method is that each person will discover that other people have different beliefs; thus, what he/she believes is only a part of a bigger system of beliefs, sometimes in conflict. The second way is linked to authority; powerful agents construct and impose their beliefs and, in doing so, maintain their power; Peirce adds that this method only occurs in cases of big power struggles. The third way is the *a priori* one, and starts from general assumptions that are extraneous to the facts but widely accepted; as in the case of many metaphysical statements, there are no facts to support them, however they do not contradict reason and the current way of thinking. Finally, the last method regards science, and assumes that humans and reality affect each

other beyond our control; this is the only method in which opinions do not affect the facts.

Apart from Peirce, this study also draws on theories closer to the object of its investigation, that is, new meat. New meat exemplifies human intervention (Culture) in a natural product, “traditional” meat. For this reason, it involves the relationship between Nature and Culture. On this area, semiotics has interestingly challenged traditional theories, which used to see the two concepts as separate and even in conflict. Semiotics is not only a technique to analyse data, but also a philosophical corpus of theories with ontological and epistemological bases. The semiotics of Nature points out that natural systems are composed of signs and codes that represent, communicate and signify (Tønnesen and Tũūr 2014). But what is Nature, semiotically? What do these signs and codes exclude or include? What do they signify? Branches of semiotics such as eco-semiotics and bio-semiotics may help to answer these questions.

First Sebeok (1991) considered Culture not in contrast to Nature, but as a part of it. Since then, semioticians have analysed the relationships between Nature and Culture as two-way, reciprocal, in flux and ever changing. Specifically, “ecosemiotics focuses on the engagement of culture and nature through signs” (Siewers 2014, p. 5), and clarifies the relationship between the two elements as a continuous exchange. Starting from Peirce, ecosemiotics assumes that “thought semiotically manifests self environmentally” (Siewers 2014, p. 6). Thus, ecosemiotics sees that Nature and Culture are not detached from each other, but, on the contrary, that “culture can be visualized as being produced by nature” (Chaudhary 2012, p. 114). On this line, Martinelli challenges any traditional view, even within semiotics, based on “the untouchable dualism Nature–Culture. Nature allowed, Culture not” (Martinelli 2010, p. 35). In fact, for him “it is when we divide the world in two that we are being superficial” (Martinelli 2010, p. 58). On Nature and Culture, “it is unacceptable to treat them separately, because too many and too complex are the relations between the two. We *cannot* analyze any cultural phenomenon as completely untied from natural context” (Martinelli 2010, p. 58, original emphasis). This work adds that when the cultural phenomenon to be analyzed is the re-elaboration of “a natural symbol” (Fiddes 1991) such as meat, investigating this relationship becomes necessary. The next section focuses on the question that this study aims to answer and on the methodology adopted to do this.

3. Methodology

This work aims to answer the following research question: how have media been shaping new meat semiotically, that is, in terms of signs,

codes and meanings, and referring to the relationship between Nature and Culture?

To analyse the ways in which new meat has been constructed by the media, this study focuses on British and US newspaper's, magazine's and broadcaster's websites. The choice of analysing websites has to do with the fact that this study is interested in the media's general approaches to new meat. Perhaps printed media such as newspapers and magazines, or TV programmes, would have provided a deeper insight in new meat, each in its specific form. Instead, their websites may be compared more easily to each other, as they belong to the same genre. Moreover, the affiliation of these websites to bigger media groups (CNN, The Guardian, etc.) makes their approach to new meat more representative and not the solitary perspective of a "small" agent. Thus, this choice gives this study more uniformity and reliability. Similarly, the choice of investigating Britain and the US relates to the aim of analysing only one language. In fact, this work even analyses the names that these new products are given on these websites (for example "cultured meat"), and comparing words from different languages would have made the analysis too complex and excessively based on personal interpretation.

The article has selected a purposive sampling of the internet versions of newspapers, magazines and broadcasters that have focused on these new forms of meat since 2012, when Dr. Post first announced his test-tube hamburger. Purposive sampling is a non-random sampling technique in which the researcher selects elements supporting a particular theory or presenting specific characteristics. The articles selected in this study do not support a specific theory, but have been selected because they focus on new meat. Purposive sampling has proven to be necessary because of the few articles on the topic. A random sampling (based on time or specific media companies) would have resulted in only a few items to investigate, and the study would have been seriously limited. Finally, this study also analyses a cookbook on new meat, to focus on the issue of the external form that new meat is being given by designers.

4. New Meat in the Media: The Utopian and the Dystopian Code

First of all, representing new meat starts almost from scratch. As new meat is a new food, there are no older cases that may serve as a model for investigating its representation. There are many analyses on "traditional" meat (Fiddes 1991; Vialles 1994; Horowitz 2006; Lee 2008; Fairlie 2010), but they only help in part, because new meat aims to supplant traditional meat, and therefore also its analyses should be carried out with different tools.

In this study, for example, analysing the relationship between Nature and Culture that new meat implies, and semiotically investigating the forms and the names created for these new products, have been relevant to catching the real meaning of this product. Evidently, these are totally new perspectives and have never been applied to traditional meat.

Certainly here there is no room to explain how all the analysed articles construct “their” versions of new meat. However, to varying degrees they all construct either a utopian or a dystopian code around this product. To cite the most interesting, among the articles referring to the utopian code, Connor (2013) calls new meat “the meat of the future” and never mentions potential scientific problems linked to these products. Interestingly, the only problems highlighted by the article relate to consumers, who may not trust such a revolutionary product, and to taste, which is still to be refined. Moreover, the only people interviewed or reported in the article are favourable to these foods, and span from the scientist, to the environmentalist to the PR practitioner. No one belonging to these categories who is opposed to new meat is interviewed. Thus, here the utopian code is first constructed through the words used in the title. “Future” is associated to the term “in vitro beef”, which suggests a scientific guarantee. Another strategy to construct utopia is to vilify reality, and the visual code aims at “defaming” traditional meat, depicting a hamburger dripping in fat being eaten by an anonymous person. Moreover, the current system of producing meat is defined as “a highly inefficient method”, while the new product is associated with the terms “save the world” and “reduction of suffering”.

An interesting construction of the dystopian code is instead in Rossington (2013), which defines the new product as a *Frankenburger*, a mix of “Frankenstein” and “hamburger”. While listing the many problems of excessive costs and lack of “real” flavour, the article warns that the new product “could be on supermarket shelves a decade from now”. In the text, one expert says that eating new meat is an “unnatural experience”, while the creator of in-vitro meat is defined as a “scientist-turned-chef” who started experimenting on mice and other animals, uncovering the evil of animal suffering even with new meat. What is more, the article highlights that the financial support by Sergey Brin, one of the two founders of Google, was long “kept a secret”; additionally, a question regards the similarity to GM foods and, on health-related problems, it is said that “proper tests into the impact will take years”. Finally, after a favourable opinion, a chef warns that “the further you go from a natural diet, the more potential health risks you run”. Again referring to the code of dystopia, Hanlon (2012) defines these products as “fake meat”, highlighting their inferior status in comparison to “traditional” meat, and Wang (2013) ends her article by writing that “it would take years to know the effect on humans”. Finally, already in the

title Zolfagharifard (2014) warns that “scientists want to build factories to manufacture lab-grown minced meat”. Relevantly, this work publishes the scientific scheme of the process leading to cultured meat, an image which is really difficult to understand and in which “cold”, technological objects are associated with a techno-hamburger (Fig. 1).

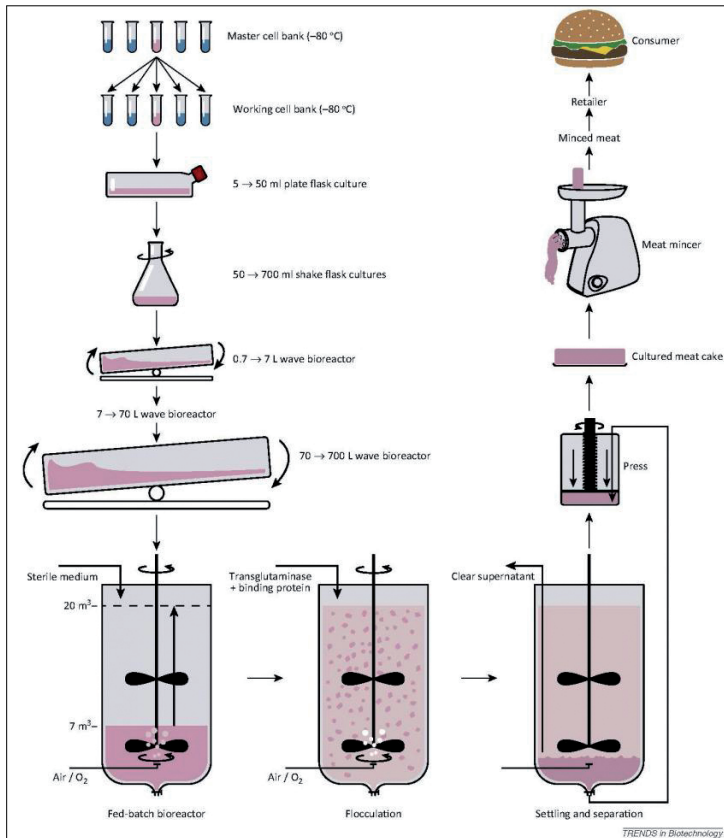


Figure 1: The production process of the techno-hamburger.

A combination of the two codes is evident in Fiegi (2013). On the one hand, the article does not hide the enormous breakthrough that the planet would gain by consuming these forms of meat, and does this by interviewing the director of a research group working on new meat. On the other hand, in all of the spaces which are left out of the interview, these statements are strongly called into question. The title and subtitle are both in question form and end with a question mark. The caption says that the scientist creating cultured meat “believes” that this product “could” solve many problems. Finally, the last question of the interview asks the researcher if he has ever tasted cultured

meat, and he first answers “I haven’t”, adding that he would like to eat it. The same question is also the final line of Winter (2012), and certainly such an approach relativizes the previous positive assumptions about new meat.

Already at a first glance, it is clear that new meat is represented in two different, contrasting ways. The first way refers to utopia. Paradigmatically, many utopian representations link to a better world than that in which we live, a world in which animals are not killed, pollution is an already solved problem, forms of illness connected to meat may be defeated, and so on. These representations, thus, relate to a form of Culture that implies health and caring for animals, and that improves Nature, which instead involves death, suffering and illness.

However, as said above, this is only the first half of the ways in which the media are representing new meat. Other analysed sources, in fact, construct new meat in a totally different way, in a way that paradigmatically relates to Frankenstein foods, GM foods, and to an excessive human intervention in a process that must remain “natural”. Moreover, some classic landmarks of the general dystopian code are highlighted. The first is the secret support to the “big plan” provided by powerful and well-known people, and in this case it even depicts the founder of Google, a company that certainly plays a dystopian role in popular culture today. The second is the role of scientists, who are often seen as latent business people, as in the article prefiguring the massive production of cultured minced meat in a near future. Even the image in figure 1 seems to be taken from many dystopian films of the 1960s, and the hamburger seems to be only a further link in a cold, techno chain. In these representations, new meat is the further step of the long way to the food-hell dominated by commercial interests and hyper-technocrats that are counterfeiting natural products. This strand of representation, thus, leads to a world driven by an overwhelming human intervention, to an excessively damaging role of human action over Nature. In the end, all of this leads to a form of Culture that worsens Nature. Finally, the dystopian code is certainly more represented in British tabloids and vaguely right-wing newspapers, but generalising could be limiting. In the end, it is the left-wing, open-minded *The Guardian* that (even in the title) defines these new products as “fake meat” (Hanlon 2012), not exactly a manifestation of trust.

As has been shown above, in some cases the two codes coexist. This seems to be caused by a hesitant point of view, rather than by awareness of the complexity of the issue and of the flexible scenarios of the postmodern era. In fact, in these articles the two codes coexist but are never mixed with each other. They never reciprocally communicate or mutually relate to each other. They are instead represented as separate, as in the page of the interview analysed above, with the two parts stating contrasting views. Moreover, many titles of these articles are written in question form

(Connor 2012; Hanlon 2012; Fiegi 2013; Wurgaft 2014; Zolfagharifard 2014) and underline, rather than awareness, uncertainty and caution faced with such a revolutionary product.

Referring to Peirce's (1877) work on beliefs, utopian representations of new meat mostly pertain to the power-led strategy, while dystopian constructions mostly relate to the *a priori* method. In fact, many representations of new meat as something that will free humanity from pollution and illness are also full of details on the new companies that are working on this product and that, according to the articles, will contribute to improving the world. Much relevance is given to the funders and financial supporters of these companies, sometimes also well-known as with the founder of Google. Here, it is clear that an important aim of these articles is to promote the companies involved and to make their brands and names popular with the readers.

On the contrary, in establishing the belief of new meat as something dystopian, as the further step to the food hell, the articles mainly apply the *a priori* method, which is, as Peirce says, the most comfortable, because it perfectly adheres to people's mindset and pre-assumptions. Often, these representations negatively link new meat to other examples of techno-foods, such as GM foods, in both titles and body text. However, it is important to remember that, scientifically, the techniques of creating these new forms of meat have nothing to do with the technique of genetically modifying foods and plants. The articles adopting the *a priori* method totally ignore all of this, and rely, instead, on pre-assumptions, being extraneous to knowledge and science, as Peirce (1877) perfectly explains.

Relating to the opposing theories concerning Nature and Culture, it seems that all these articles totally agree with the traditional view seeing Nature and Culture as separate, opposing and sometimes conflicting principles. The idea that Culture is part of Nature, that the two concepts affect each other in complex, two-way relationships, is totally extraneous to them. In adhering to old views, these articles ignore that humans are part of Nature, along with the product of their abilities and ingenuity. Instead, it seems clear that these media representations cannot see "how much we have in common with other species and how much we have constructed a reality that divides us from them" (Augustyn 2010, p. 198). In fact, delimiting Nature with precise boundaries and excluding human action from it do not make sense, because "life is composed of molecules, which manifest themselves as signs" (Hoffmeyer 2008, p. 15) in human, animal and other forms of life.

However, analysing these articles more in depth may disclose other trends and meanings. More precisely, semiotics may help to unveil that the newer conceptions of Nature and Culture are in some ways present in new meat, in its media representations when the media report the way in

which scientists and designers have been conceptualising this new product. This is clear when the analysis focuses on other details, i.e. the form that scientists and designers have been choosing to present new meat to large audiences and the name given to these new products (by both scientists and the media). The following section firstly analyses the forms that scientists and designers are giving to new meat, as a sign of more complex codes that relate to the relationships between Nature and Culture. Secondly, it investigates the names of new meat, the paradigmatic links that they imply, and the new relationship between Nature and Culture that they prefigure.

5. Form and Name: Negotiating a New Relationship between Nature and Culture

As demonstrated above, the utopian and the dystopian approaches present two different versions of new meat, having contrasting perspectives and agreeing on nothing but the fact that Nature and Culture are separate and in conflict. However, a deeper semiotic investigation unveils that these representations also involve the newer approach, that of seeing Nature and Culture as interrelated. This happens in the forms and in the names of new meat, that are created by designers and scientists, and that the media only report, whatever the perspective.

In its first and sole media presentation, new meat came in the form of a hamburger, which is not a recognisable part of the animal such as a leg or a T-bone steak. Replicating a part of the animal would have meant reproducing Nature and hiding the role played by Culture in the production process. At the opposite end of this principle, creating a form totally detached from already existing meat would have highlighted the role of Culture and ignored the natural character of meat. The hamburger avoids both problems and negotiates a more balanced relationship between the two concepts. In fact, the hamburger does not replicate Nature, but is a widely recognised form of “traditional” meat, even though created by humans. Again, out of the neat distinctions of the media representations, here Nature and Culture are considered as interacting in the construction of this new food.

Besides this, many designers are working on what forms new meat should take in the following years, if and when it becomes an industrial product available in supermarkets. Shaping food is not only an aesthetic issue, and it has already been demonstrated that the form of an item of food affects the way in which it is perceived and consumed (Gonzales Espinosa and Chen 2012). For this reason, “design is collaborating with food scientists, nutritionists, restaurateurs, and other culinary experts, to bring innovative food experiences to the world” (Traitlet *et al.* 2014, p. 39). It is interesting to

Importantly, each name is composed of two parts that are certainly contrasting (for example “Cultured Meat”), but even more importantly, these two words are used together and form a term to signify an object, a new food. Thus, rather than a clash, these names suggest a new relationship between the two parts. At a higher level, as the two components refer to Nature and Culture, these names negotiate a new relation between these two concepts. In other words, through their contrasting names these new forms of meat are challenging our traditional separation between Nature and Culture, despite the way in which the media represent new meat. On the one hand, the media represent new meat as a clash between Nature and Culture, in which Culture either improves or worsens Nature; on the other hand, the name that scientists give the product (and that the media replicate) prove that this contrast is already accommodated, at least at the level of language.

All of this also signifies that Culture does not improve or worsen Nature, but simply contributes to the continuity of processes that are cultural, social, and therefore natural, because, as theorised by Sebeok (1991), Culture is part of Nature. In the end, these processes concern human beings and the world, the entirety of signs and codes that cannot be detached or pigeonholed.

6. Conclusion and Further Research

This study has analysed the media representations of new meat, the forms of meat that scientists have been experimenting on in various parts of the world and that do not entail massive farming and killing of animals in their production processes. The article has demonstrated that the media are representing new meat in two different ways. In the analysed texts, new meat is either a utopian food paving the way to a world without pollution, illness and animal suffering; or a dystopian, further step in the long series of Frankenstein foods, brought about by excessive, “misguided” human intervention that damages the “right” natural processes.

The first strand recalls the idea that Culture improves Nature, and that Nature involves pollution, illness and animal suffering; moreover, it has unveiled commercial interests and power-related reasons in the attempt to fix the new belief, according to Peirce (1877). The second trend supports the idea that Culture worsens Nature, which is originally candid and spotless, and that is only later damaged by human intervention; this approach builds on what Peirce defines as the *a priori* way of fixing a new belief, and follows in the footsteps of other techno-products such as GM foods; even though GM foods have scientifically nothing to do with new meat, the two products are represented as similar. In the end, Nature and Culture in these

representations are always two separate concepts, even conflicting, as seen in many traditional theories. Contrastingly, many newer semiotic theories see that the two concepts are part of a bigger whole, and specifically that Culture, that is, human action, is also part of Nature. These new, challenging perspectives appear to be totally ignored in the analyzed representations. On the one hand, utopian representations do not see the link between Nature and Culture because Culture improves an unfair and illogical Nature. On the other hand, the dystopian texts do not see the same link because the “bad” Culture worsens the “good” Nature. The media seem to be blind in ignoring such an important progression in the conceptualization of the role of humans in the environment.

However, there are deeper signs and codes that suggest that Nature and Culture are not always and completely separate in new meat, and the media sometimes represent this. The fact that at the first and sole presentation so far, new meat has been shaped as a hamburger signifies a perfect negotiation between Nature and Culture. The hamburger in fact is not totally “natural” as a leg or a ribeye steak, and at the same time is not totally extraneous to traditional meat. Moreover, even the forms developed by designers link to existing objects (e.g. other foods, flowers) but not to the animal. This highlights human intervention without forgetting the presence of Nature. Finally, the analysis of the names that are being used to define these new products has demonstrated that Nature and Culture are continually signified when the media refer to new meat. In fact, in all the names used in the articles, Nature and Culture coexist, and together form the name with which the media refer to new meat. Interestingly, signs and codes shaped by scientists and designers (and replicated by the media) show much more adherence to the newer conceptions of Nature and Culture. Instead, signs and codes constructed by the media display a more traditional approach. In the end, the media lag behind when dealing with these concepts, while other fields such as science and design prove to be more innovative.

Probably, as happened in the case of other techno-foods, only more collaborative and mutual relationships between stakeholders (e.g. scientists, producers, the media, designers) would make this representation more multifaceted. Only this scenario would prefigure more appeased, flexible and reciprocal approaches to the product and to its relationships to Nature and Culture. Whether new meat is dangerous or healthy, only when this scenario is realized, will the new belief be fixed even in the media thanks to Peirce’s (1877) fourth strategy, ignoring prejudice and only relying on science and knowledge.

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