Minna Kanerva

THE NEW MEATWAYS AND SUSTAINABILITY

Discourses and Social Practices

[transcript] PoliticalScience

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Political Science | Volume 105

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Discourses and Social Practices

[transcript]

Doctoral Dissertation, 2019. The publication of this book has been supported by the Sustainability Research Center (artec), University of Bremen.

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at http://dnb.d-nb.de

First published in 2021 by transcript Verlag, Bielefeld

Cover layout: Maria Arndt, Bielefeld
Printed by Majuskel Medienproduktion GmbH, Wetzlar
Print-ISBN 978-3-8376-5433-2
PDF-ISBN 978-3-8394-5433-6
EPUB-ISBN 978-3-7328-5433-2
https://doi.org/10.14361/9783839454336

Printed on permanent acid-free text paper.

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"Directly recognizing and engaging people as agents of change can drastically speed up [...] transformation processes because everyone is part of a system, and everyone has a sphere of influence. Activating conscious human agency that is critically reflective of individual and shared assumptions, beliefs and paradigms is a powerful way to shift norms and institutions"

Karen O'Brien, a professor of Human Geography

"Not everything that is faced can be changed, but nothing can be changed until it is faced"

James Baldwin, a novelist

"Hope is an embrace of the unknown and the unknowable, an alternative to the certainty of both optimists and pessimists"

Rebecca Solnit, a writer

"After the final no, there comes a yes, and on that yes the future world depends"

Wallace Stevens, a poet

Acknowledgements

This book is based on my PhD. I am grateful to my two mentors, to Ines Weller for important conceptual and practical support throughout the process, and to Cor van der Weele, for many constructive, valuable and patient comments during the final year of writing.

I appreciate greatly the support from my colleagues at my research center. Further at the University of Bremen, I thank Professor Martin Nonhoff for giving me advice for an initial entrance to discourse-analytical work.

As regards other experts, I am grateful in particular to Daniel Welch for valuable comments on the conceptual basis. I also owe thanks my Finnish colleagues Anu Raijas, Mari Niva, Johanna Mäkelä and Piia Jallinoja who were instrumental at a critical point of my building the conceptual structure.

I am grateful to my friends far and near for asking me how I am and for giving me so much encouragement, and especially to Jill for her tireless support at different points of the process, and to Nadine for being a great sounding board for conceptual ideas.

All of my extended family — you know who you are — thank you so much for your support and patience. Also, I will always be grateful to my parents for giving me important values. I wish you were still here so that I could thank you in person!

Finally, my son Aleksi had to put up with a stressed-out Mom for quite a while, and despite that, he managed to support me in his many wonderful ways, including humour. I am so lucky to have had you on my team.

Abstract

Societies will have to go through an extremely challenging transformation towards sustainability in the near future. To do this by design, rather than by disaster, calls for a paradigm shift, and for science to support policymakers. Social practice theories help challenge the often hidden paradigms, worldviews, and values at the basis of many unsustainable practices. However, practice theoretical research can struggle to provide effective means for policymaking. Connected to social practices, discourses and their boundaries define what is seen as possible, what the range of issues and their solutions are. By exploring the connections between practices and discourses, this book develops, firstly, a conceptual approach to help enable purposive change in unsustainable social practices. This is done in an interdisciplinary manner integrating different literatures. Secondly, the book takes meat and the current meat system as a central theme. Radical transformation towards new meatways is arguably necessary, with the climate crisis and massive biodiversity and ecosystem loss being closely connected to the current meat system. Additionally, pandemics originating in wild or domesticated animals we eat is yet another example of how vastly unsustainable our food-related practices are. This book explores the necessity of transformation, as well as the complex psychological, ideological, and power-related mechanisms slowing down and inhibiting change.

Notable for the practice-discourse framework is that it allows a focus, on the one hand, on existing *strategic ignorance* of conflicting values, emotions and knowledge, and on the other hand, on the potential for *discursive consciousness* of practices, and their related (conflicting) values, emotions, and knowledge. The wider, the more varied and in-depth discourses there are, the more difficult strategic ignorance is to maintain. Discursive consciousness can create *discursively open practices* which may be well established and discursively dominant in a society, nonetheless, increasingly questioned, creating tensions and potential openings to different ways of going about the practices. Especially significant in such discursively open practices can be different and new meanings replacing, or co-occurring alongside old meanings. Discourses disseminate new meanings and potential new ways of doing things to a wider social group or society. Discursive consciousness can be seen as a key concept for purposive change. Further, it may better enable change in the

context of *distributed agentive power* residing within the practice-discourse arrangement. A positive feedback loop may emerge between collective individual action creating political change, political change changing both individual and societal values, and changing values increasing willingness for collective action.

Taking the widened, and interdisciplinary version of a social practice theory approach to meat-eating related practices, this book examines discourses related to the *new meatways*, firstly flexitarianism, and secondly, eating cultivated or plant-based meats, or insects. Cognitive frames can work as a focus of practice theoretical analysis especially due to their connections to values, emotions, and knowledge on the side of practices. Discourse data can be used to investigate some of the underlying issues to do with controversial practices, or practices that are established, but being questioned. Discourses can reveal much about the values, emotions, knowledge, paradigms, and worldviews linked to social practices, as well as potential coping mechanisms, such as strategic ignorance of related conflicts. The book also discusses potential ways in which the new meatways and discourses around them could enable a purposive transformation.

The analysed online discourse data suggests that meat-eating related practices can be seen as discursively open, especially due to the new meatways offering new solutions, as compared to vegetarianism and veganism. Discourses regarding cultivated or plant-based meat or insects push the boundaries of what meat is, and seeing strong flexitarianism as a realistic meatway helps imagine a solution to finding sufficient future protein for the world. Further, discourses around the new meatways can reveal somewhat hidden frames that have supported existing practices in the last decades. Two conceptual metaphors present in the data nail down well two issues regarding transforming the meat system towards radically less, or no intensive industrial production, with the goal of radically lower negative impacts. The first metaphor, the *hungry beast*, addresses the still very present meat demand paradigm or frame in need of critical reassessment. The new meats (cultivated meat, plant-based meat and insects) are partially functioning in this frame with the underlining assumption that they are necessary to satisfy the starkly increasing global demand for meat. The second metaphor of a *journey* illustrates how sustainable ways of eating protein, including some more conventional meat, can be realised. When framing meat eating and its transformation using this metaphor, different meatways are seen as points on a continuum, where many possible journeys along that continuum can be made. In this way, even more radical changes can be facilitated. Finally, compared to the old meatways, the new meatways can better align values related to sustainability with values often being prioritized in daily food-related practices, such as providing for family, convenience, tradition, freedom, politeness, and pleasure. The new meatways, therefore, offer a way to expand the discourse, away from the conventional animal-based meat vs. no meat dichotomy.

1. Introduction

This book is concerned with the issue of change as regards unsustainable social practices, taking meat and the current meat system as central examples and a theme. In this chapter, I will first introduce my focus and my motivation for doing this research. Subsequently, I will explain my research approach and goals for this work, and finally, briefly present the overall structure of the book.

1.1 Framing and objectives for the work

The enormous global system created to produce human food from non-human animals is argued to be the number one single cause of climate change and biodiversity loss, the two most urgent interlinked crises humanity is facing in the 21st century. Additionally, it causes many other serious problems. Whether such a fundamental practice to humans as eating other animals (Zaraska, 2016a) can be ended remains to be seen, but it is certainly possible to radically change this practice. Even if extremely challenging, it is arguably necessary to radically alter the current system of meat production and consumption — in short, the *meat system* — and go back to eating conventional animal-based meat only occasionally on more or less a global basis, supplementing, or replacing this with either meat-like or non-meat-like plant proteins. Without such changes, the dual crises cannot be sufficiently tackled, as is increasingly argued (Benton et al., 2021; Davis et al., 2016; Garnett, 2011; GRAIN-IATP, 2018; Johns Hopkins Center for a Livable Future, 2018; Springmann et al., 2018). The next chapter will discuss the many reasons to transform the meat system, but one of the most compelling ones is the amount of greenhouse gases (GHGs) produced by the meat and dairy system. In a business-as-usual growth scenario — regarding global population, and per capita meat and dairy consumption — the GHG emissions from this system would take up four-fifths (81%) of the global carbon budget for the 1.5-degree scenario for 2050 (GRAIN-IATP, 2018).[1]

1 This proportion takes the current contribution to global GHG emissions of the meat system to be 14.5% (FAO, 2013). The next chapter will discuss this contribution issue some more.

The question of meat is related to the more general question of sustainability, especially environmental sustainability.[2] Taking a social practice approach, whereby practices are the focus of inquiry, rather than consumers and their supposedly malleable behaviour, Shove and Spurling (2013) argue that achieving sustainability requires a radical redefinition of what counts as *normal* within social practices, involving not just the consumers, but all other parts of the societal system as well. In their view, changing social practices forms the foundation for a transformation towards sustainability. Therefore, understanding contemporary social practices — how they have changed, are currently changing, and how they might, especially purposively, change in the future — is essential. O'Brien (2012:588) sees indeed that to bring about sustainability, more focus has to be placed on change itself, "*how* humans individually and collectively approach change, *why* change is so often resisted or impeded, and, most important, *how* systems-scale changes towards sustainability come about".

Traditionally, social practice theories have not focused on purposive change. However, such a focus is critical, if social practice theories are to be employed to make effective public policy for more sustainable societies (Lorek & Vergragt, 2015).

Following from the above, a more thorough understanding of certain aspects of social practices can help enable transformative change, both for social practices more generally, and for meat-eating related practices in particular. Social practice theories are my point of departure in the conceptual structure of this book. However, I explore conceptually the better incorporation of especially four aspects relevant to change. Firstly, in the so-called second wave of social practice theory literature (Postill, 2010) from the last two decades, lately often focusing on (more sustainable) consumption, there has been little exploration of *how social practices and discourses combine*.[3,4] Seeing discourses as particularly relevant for change towards sustainability, I explore the conceptual connections between discourses and social practices within the framework in Chapter 3.[5] Secondly, the *role of values and emo-*

2 The concept of sustainability is usually considered to include economic, social and environmental components. This book focuses on the environmental component. It can be considered a prerequisite for the other two components.

3 With Daniel Welch as one recent exception.

4 Social practices will be discussed in detail in Chapter 3, but as regards the concept of discourse, there are many, rather different definitions for it. The one that perhaps most closely relates to my understanding and use of the word in this book is from Keller (2013:2), whereby discourses are "more or less successful attempts to stabilize, at least temporarily, attributions of meaning and orders of interpretation, and thereby to institutionalize a collectively binding order of knowledge in a social ensemble" around particular themes or issues.

5 I am aware that especially the works of Michel Foucault, and his broad view of discourses, are relevant to the study of both discourses and practices (see e.g. Jäger, 2001, for a discussion). However, his work is conceptually different from the contemporary social practice theory literature that focuses on a more specific definition of social practices, and especially on

tions is rarely discussed in social practice theory literature, even if their existence may be acknowledged. However, I see values and emotions, and conflicts between them, as having an essential intertwined role in both practices and discourses, in various ways often hindering change. This is, therefore, another aspect I explore in the conceptual structure. A third aspect linked to the practice-discourse connection is the *role of discursive consciousness*, of practices, and their related values, emotions, and knowledges, as well as any related conflicts. Although seen as a rare state of mind in social practices (Warde, 2014), discursive consciousness can also be seen as a key concept for purposive change, as discussed later. Finally, discursive consciousness of social practices can better enable change at both individual and societal levels in the *context of distributed agentive power* residing within different components related to social practices, including discourses, and including collective, and sometimes even individual, human agency.[6]

Taking the somewhat widened and interdisciplinary version of a social practice theory approach from the conceptual chapter (Chapter 3) to meat-eating related practices in the empirical chapter (Chapter 5), I examine discourses related to what I call the *new meatways*. The new meatways are comprised of eating alternative meat-like foods, such as cultivated meat, plant-based meat, or insects (called together the new meats), and flexitarianism, i.e. eating conventional, animal-based meat only occasionally, in the strong version, and less than daily in the weak version of flexitarianism.

Due to the under-exploration of the connections between discourses and social practices mentioned above, using discourse data to study social practices is rare (but see Fairclough, 2001a). However, I find it a useful way to investigate some of the underlying issues to do with especially controversial practices, such as those related to meat eating. Discourses are useful for examining cognitive frames, essential for the values, emotions, and knowledge linked to social practices. In particular, discourses may touch upon issues such as coping strategies, related to the value or emotion conflicts often hidden in meat eating, and the ideologies or values embedded, and often taken for granted, in such practices.

My overall goal with this work has been to explore ways in which societies can transform towards more sustainable practices in general, and more sustainable

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(un)sustainable social practices. In this literature, practices and discourses are largely considered to be separate entities, and I take this view as well, even though I explore the important connections between them.

6 The more general issue of (dominative) power is of course relevant too. In social practice theories, the issue of power is often an underlying assumption, whereby the "hidden" part of individual practices containing cultural values, ideologies, materialities, infrastructures, etc. on the one hand, and the interconnectedness of many if not all social practices, on the other hand, are hindering change. This book will include discussion of such power as well.

meatways in particular. In Chapter 6, I will return to the issue of the potential relevance of this research.

1.2 Research approach

My research approach in this book is two-fold. Somewhat unconventionally for a doctoral dissertation which this book is based on, I include specific research related goals for both building the conceptual structure and doing the empirical analysis. This approach came about from my desire to work on the issue of meat, but in the contexts of both social practice theories and discourses, as I consider discourses essential for purposive change. As mentioned above, more recent social practice theory literature in general, and the social practice theory literature focusing on sustainability transformation in particular, has not (yet) engaged much in the connections between social practices and discourses, and therefore, I decided to explore this issue in this book, in addition to focusing on the case of meat. The conceptual structure will therefore not only accompany and support the empirical part, but also extend beyond it, and independent of it.

I call the first of my research related goals a *research task*, and it is the following:

- Exploring social practice theories and the connections between discourses and social practices, in order to create a framework that could help enable purposive change in unsustainable social practices both at individual and at societal levels.

In the conceptual chapter (Chapter 3), I will approach this task by looking into not just social practice theory literature, but further literatures, such as social psychology, cognitive linguistics, philosophy, critical discourse analysis and sustainability science itself. Spotswood and Marsh (2016) assume that the future of behaviour change is transdisciplinary. In such a manner, I will combine aspects of these literatures in my conceptual work.

The second research related goal is to answer a more specific *research question*, namely the following:

- How could the new meatways and discourses around them enable a purposive transformation in meat-eating related practices?

In the empirical chapter (Chapter 5), I will attempt to answer my research question by examining the collected discourse data from various angles, engaging in detailed analysis with a critical approach. The data itself is collected from the online Guardian, a broadsheet newspaper based in the United Kingdom, from four

separate articles and their reader comments[7] from between 2015 and 2017. The articles all discuss one or more of the new meatways.

As conclusions, I will include several suggestions on how specific elements of meat-eating related discourses can connect to change in practices, as answers to the research question, while reflecting on the research task, i.e. the more theoretical connections between discourses and social practices.

1.3 Outline of the book

Following this first chapter, Chapter 2 is a detailed overview of the topic of meat. It will first discuss the issues involved in the meat system, discuss the history of meat eating, and review trends in the past half a century in several countries, as well as discuss what might have been influencing the trends.[8] Subsequently, the chapter will review discourses around meat from the past and present, before moving on to real and potential future action to reduce meat eating. The new meatways and the new meats will also be discussed in the second chapter.

In Chapter 3, I will move into building the conceptual structure for social practices in connection with a sustainability transformation, and this is done in an interdisciplinary manner. The methodology of critical discourse analysis for the empirical analysis is introduced in Chapter 3, as it relates to the conceptual structure as well.

Further, Chapter 4 will give an overview of the actual methods of the data analysis, and discuss other issues related to the empirical analysis, such as data choice and quality criteria for the analysis. Subsequently, Chapter 5 will contain the actual empirical analysis of the chosen discourse data. I consider the results of this analysis to be an exploration of some of the elements in the conceptual structure, and indicative of the potential dynamics of transformative change.

Finally, in Chapter 6, I will present conclusions from the conceptual work, as well as from the empirical analysis, and include some suggestions on how to potentially further the transformation of meat-eating related practices. I will also reflect on the work as a whole.

To note, the theme of discourses — the red line of discourse, so to speak — carries through the whole rest of the book.

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7 The total number of included reader comments is 607.

8 In general for this book, references to trends, influences and discourses in both the Global North and the Global South are included when available and appropriate. The empirical data, however, reflects discourses more in the Global North. The Global South and North division is a socio-economic and political division of countries. The countries in the Global South largely consist of industrializing or newly industrialized countries.

1.4 General note on style

There are a few issues to mention as regards the style of writing in this book.

First of all, I tend to use somewhat less complex language and fewer disciplinary-specific terms as might be the case for some comparable work based on dissertations. This is partly so because English is not my native language, but other than that, it is a deliberate choice. My personal preference is to avoid potentially fuzzy concepts or complex ways of presenting ideas that may not always be completely clear to readers, or sometimes not even to writers. As Billig (2009) argues, simple language is often better than technical or specialist language, as technical terms can sometimes be used more imprecisely, and their use may appear to solve a problem, when in fact, the writer is only avoiding solving the problem by using them.

Secondly, interdisciplinarity requires one to be as clear as possible and to use less jargon as well. Readers may not be familiar with the vocabulary of all the related disciplines, and therefore using too many specialist terms can make interdisciplinary texts unclear. Further, sometimes several specialist words could be applied from different disciplinary viewpoints to a principally similar idea, or, on the other hand, certain concepts may be viewed quite differently in different disciplines. Avoiding specialist words when possible often takes care of the first kind of ambiguity, and defining concepts specifically enough — but sometimes necessarily broadly — hopefully takes care of the second form of ambiguity.

Thirdly, my writing style in this book is less neutral in tone than the language in most doctoral dissertations might be. This is a style that is more common in sustainability research. Peattie (2011) notes that sustainability researchers are often criticized for doing research that is based on values and driven by a desire to do something good, as *real* research should be value-free, objective and dispassionate. However, all research is in fact laden with certain values, beliefs and worldviews. When these are consistent with the *dominant social paradigm* (whatever that may be in the particular research context), they are largely invisible, and so researchers, together with people in general, may not often be fully aware of the paradigm, and even when aware, they may not see the related values and beliefs as potentially or necessarily challengeable.[9] Sustainability, on the other hand, is *ideally* also a paradigmatic lens through which to view the world (Peattie, 2011). In the context of this book, this lens occasionally leads to — perhaps more visible — ideological arguments.[10] An example of such arguments for me personally, is that, without a sense and frame of *co-responsibility,* current societies may not be able to find a way out of the urgent ecological crises, to be tackled for our survival as organised

9 See Chapter 3 for more discussion on ideologies and paradigms.

10 Ideologies can be seen here as general, socially shared beliefs (van Dijk, 1998).

societies. In terms of both the research lens, and the research results, it is of course important to try to remain critical and self-reflective.

Finally, on the term "meat eating", as discussed in Chapter 3 in connection with discussing *meat-eating related practices*, I generally prefer using the term "meat eating" to "meat consumption", as a more concrete term that is less associated with general consumption related arguments. In specific contexts in this book, I do still use "meat consumption", while occasionally referring to "eating animals".

2. Old and new meatways[1]

In this chapter, I will give background to the issues within the meat crisis, explore how humans have been eating non-human animals over time, including in the last half a century, and consider potential reasons for changes in these practices. Subsequently, I will explore the different discourses related to eating animals — with the underlining notion, related to both my research task and research question, that discourses are deeply tied in with practices. Finally, I will look at some future visions for a transformation of the meat system.

2.1 Background

From scientific literature, it is evident by now that the impacts of the production and consumption of animals for human food on the natural world, and consequently on humans, are catastrophic, especially in terms of climate change and biodiversity loss. The meat system is said to be broken, something acknowledged by many members of the research community, and echoed by some media outlets. The topic is very gradually starting to appear in some policy domains. At the same time, most people in the world appear either unaware of the scale and extent of the damage done by the *global meat complex*,[2] or even if aware at some level, unwilling, or seemingly unable to change or critically assess their own food-related practices (see e.g. Hartmann & Siegrist, 2017).

1 The old meatways refer here to traditional (mostly industrial) and abundant meat eating by the current vast majority, and vegetarianism or veganism by a current small minority.

2 The Institute for Agriculture and Trade Policy (IATP) defines the global meat complex as a highly horizontally and vertically integrated "web of transnational corporations […] that controls the inputs, production and processing of mass quantities of food animals", see e.g. https://www.iatp.org/blog/leaders-global-meat-complex. I use occasionally the term Big Meat for this complex, and often just refer to the "meat industry" more generally. The meat system, on the other hand, refers in this book to the general systems of production and consumption of meat.

In addition to being the most important single contributor to both climate change and biodiversity loss, the global meat complex contributes to several other crucial issues. All this will be covered in Section 2.1.1, after which I will explore the history and present of eating animals in Section 2.1.2. In Section 2.1.3, I will reflect on some of the issues often considered to influence the practices of humans eating animals.

2.1.1 The issue with meat

Figure 2.1 shows the growth of total global meat consumption in the last half a century (measured as "supply", see Box 2.2).[3] While the world has doubled its human population in this time, it has quadrupled its meat consumption, thereby the per capita consumption has doubled (for per capita growth, see Figure 2.5). This much-increased consumption of meat has largely been facilitated by industrial meat production methods developed since World War II, constituting one of the biggest changes in the entire food and agriculture industry (van Otterloo, 2012). Increasingly, the meat produced in the Global South is, however, also industrial, and so for example, at least three-quarters of the world's chickens and more than half of pigs were produced industrially in the 2000s (FAO, 2009), and now, ten years later, these proportions are likely to have risen further.[4] A recent investigation concluded that, for the United Kingdom, the so-called megafarms (large CAFOs, confined animal feeding operations) are already widespread (with 800 of them in total in the country) and most of the rest of the UK meat production is likewise intensive.[5]

The impacts of the global meat complex have been covered in literature in quite some detail, especially in the last decade. A recent comprehensive report on the issue is the Meat Atlas produced by the Heinrich Böll Foundation (2014), and a recent peer-reviewed overview is provided, for example, by Godfray et al. (2018). Below is a review of some of the most pressing issues, related mainly to intensive

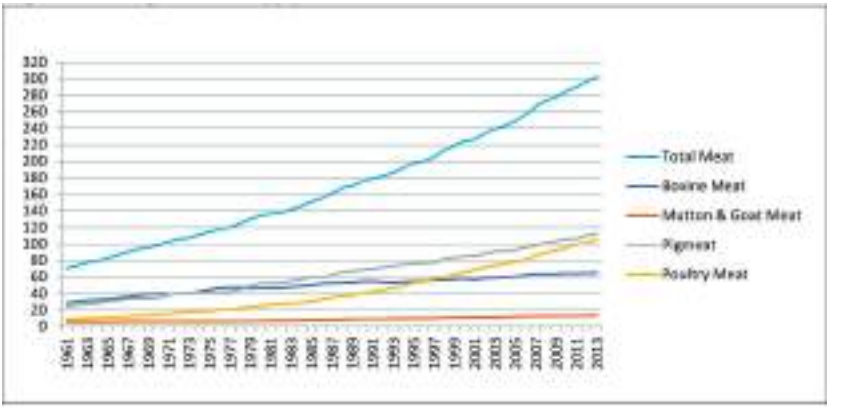
3 As of September 2020, FAOSTAT provides the historical food supply data series only until 2013. However, it can be observed, for example, from the OECD-FAO database that the trend-lines since 2013 are not essentially different from what is seen in Figures 2.1, 2.5 and 2.14 in this book.

4 A 2012 report on India concluded that around 90% of meat chickens in India were factory farmed at that point (MacDonald & Iyer, 2012).

5 A study by the Guardian newspaper and the Bureau of Investigative Journalism, see https://www.theguardian.com/environment/2017/jul/17/uk-has-nearly-800-livestock-mega-farms-investigation-reveals. The definition for an intensive UK farm is that there are more than 40,000 chickens, 2,000 pigs or 750 beef cows. The US definition for a large CAFO (also so called megafarm in the UK) is that there are at least 125,000 chickens, 2,500 pigs, or 1,000 beef cows.

non-organic animal agriculture, rather than organic, or extensive animal farming.[6] Figure 2.2 divides the impacts to four main categories: issues linked to a range of environmental impacts, issues linked more directly to human and animal welfare, and lastly, ethical impacts.

Figure 2.1: Total global meat supply from 1961



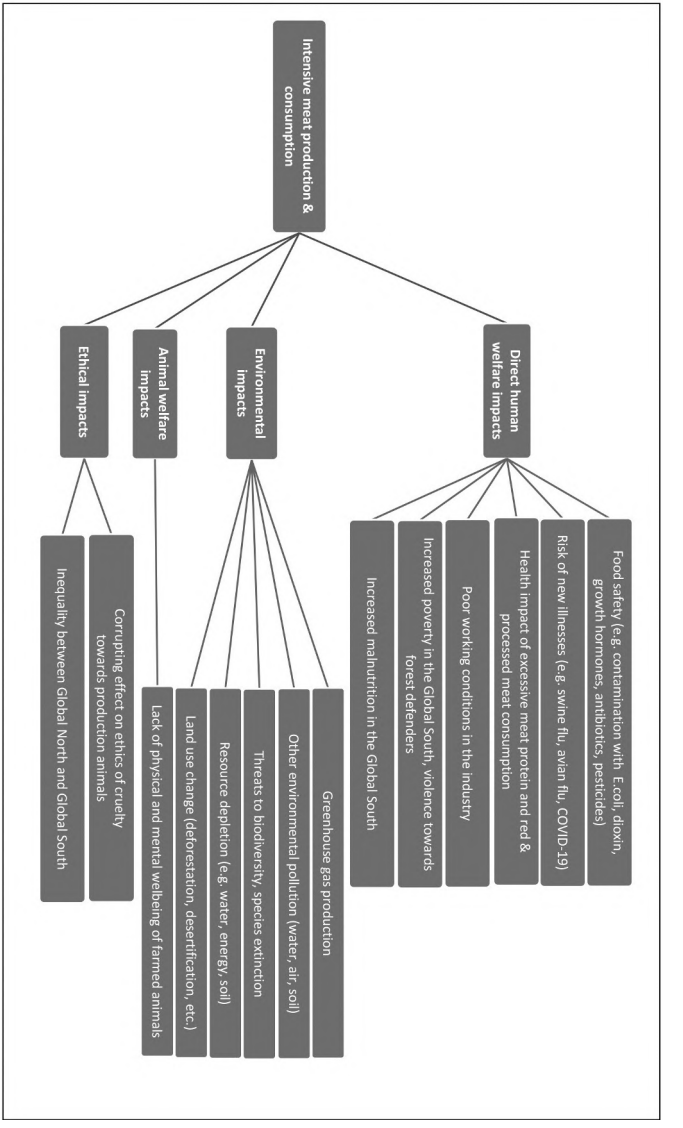
Source: FAOSTAT.

Notes: Data in in millions of tonnes; bovine meat consists of cows and buffalos, but overwhelmingly cows; poultry meat covers chickens, turkeys, ducks, geese and guinea fowl, although mostly chickens; for the difference between supply and consumption, see Box 2.2; all food and agriculture-related data from FAOSTAT is available from 1961.

Firstly, *direct impacts on human welfare* include those generated from the production methods, affecting either food safety or the risk of new illnesses, or both. The domestication of farm animals has most likely brought about most of the common human viral diseases over the last 10,000 years with viruses jumping from animals to humans in close contact. However, the ever-increasing expansion and intensification of meat production — especially in poorer and less regulated conditions in the Global South, but in the Global North as well — has led to the dramatic increase in the emergence and spread of infectious diseases originating in animals, such as avian influenza (e.g. Greger, 2017) or the COVID-19 pandemic. Reducing

6 Organic or extensively produced meat shares many problems with intensively produced meat, especially with its climate impact (see e.g. Steinfeld et al., 2006; Foodwatch, 2009), and cannot offer an all-encompassing alternative to intensively produced meat, also in terms of scale. However, since it is often discussed as a real alternative, some discussion of organic/extensively produced meat will be included (e.g. in Section 2.2.1). Further, switching from conventional to organic meat can have positive or negative spillover effects (discussed in Section 2.3.1).

Figure 2.2: Impacts from systems of intensive meat production and consumption



Source: Figure by author.

global consumption of meat would be a way to reduce zoonotic disease spread (White & Razgour, 2020). The contamination of meat intended for consumption by therapeutic or growth-promoting antibiotics, growth hormones, pesticides animal faeces containing bacteria, such as E. coli, or toxins, such as dioxin, is a related and serious risk to human welfare. Similarly, bovine spongiform encephalopathy (BSE) is a disease caused by prion contaminated meat. The current global crisis with antibiotic-resistant bacteria has also to a large extent resulted from the same antibiotics being given to farm animals, often as a growth promotion agent (e.g. WHO, 2015).

Likewise, direct human welfare impacts are generated from poor working conditions in the meatpacking industry, most importantly from high rates of injury, often extremely low pay, lack of benefits, and enormous stress due to the rapid pace of work, foul working environment and the generally expected ruthless handling of live animals. According to Foer (2009), the annual personnel turnover rates in the United States typically exceed 100%, and are possibly up to around 150%. Often farm level workers, for example, in American intensive animal farming, are immigrants paid under minimum wage levels (e.g. Donaldson, 2016a).

Further, there is conclusive evidence by now that the excessive consumption of meat, and especially red meat and processed meats, contributes significantly to obesity and most serious human illnesses, such as cancer, cardiovascular disease, or diabetes (e.g. Deckers, 2013; Kmietowicz, 2017; Rouhani et al., 2014; Sinha et al., 2009; Wellesley et al., 2015; Willett & Stampfer, 2013). That societies could be consuming too much meat as regards human health has, however, been a controversial issue for decades, at least partly due to pressure from the global meat complex (Nestle, 2018; The Pew Commission, 2008), and has resulted, for example, in governments being reluctant to include limits on meat in official nutritional guidelines. Even when such limits are included, these involve only very modest recommended reductions (Gonzalez Fischer & Garnett, 2016), as discussed later in this chapter.

Finally, for human welfare impacts, and importantly from a global perspective, intensive meat production has an impact on poverty and malnutrition. Tudge (2017), among others, argues that poverty in the Global South is being amplified by the gradual but steady industrialization of meat production there. The human labour input that has helped employ large masses of people on subsistence farms in the South is being cut in the name of efficiency, simultaneously, however, increasing unemployment and decreasing access to food production (Fiddes, 1991; Tudge, 2017). Further, the expansion of CAFOs and supermarkets in the Global South — often favoured by governments (e.g. Heinrich Böll Foundation, 2017) — is cutting down the beneficial smallholder production, and increasing grain prices, as a larger proportion of the grain goes to the CAFOs, with the higher prices being particularly a problem for the poor animal farmers (MacLachlan, 2015). Additionally, growing

feed for meat-producing animals worsens food shortages through deforestation and the displacement of local populations from their traditional lands, and violence towards forest and wildlife defenders.[7]

Although most people would likely prefer not to think about it, producing billions of individual animals globally only to be killed for human food[8] may be considered by some to be one of the worst consequences of industrialized animal agriculture. It can be argued that the question is less about *animal welfare* within the production systems as such, and more about sentient animals' right to be respected, a discussion philosopher Peter Singer set off over 40 years ago, and their right to not necessarily be our food, let alone in such excessive amounts. Animal welfare issues are most closely linked to the treatment of animals in intensive agricultural production systems (see e.g. McLeod-Kilmurray, 2012). The problems are rooted in lack of both physical and mental wellbeing of farmed animals, which also lead to serious human welfare risks, on the one hand, through the use of large amounts of therapeutic antibiotics to contain diseases, and on the other hand, through stressed animals being exposed to diseases that end up infecting humans, as mentioned above. Foer (2009) argues, however, that the meat industry discovered early on that an overall good health of farm animals is not a required condition for making a profit.[9]

The lack of wellbeing of the production animals is also an issue for the third category of impacts from intensive meat production and consumption, relating to the *ethics of meat production*, i.e. questions of morality. Firstly, it can be said that cruelty towards animals is morally wrong. Rawles (2017), among others, has argued that animal welfare should be included in the concept of sustainable development, alongside economy, environment and society, since sustainable development in itself is "ethically aspirational". Further, she suggests that regarding animal welfare as a luxury that societies cannot afford, because of more dire economic or environmental pressures, reflects the instrumental thinking (regarding nature) that is at the root of the problems societies are currently facing.

There has been a strong but ultimately failed effort to include animal welfare in the 2015 Sustainable Development Goals for 2030.[10] However, in October 2016,

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7 This phenomenon is increasingly reported in the news. See e.g. https://www.dw.com/en/5-deadly-countries-for-environmental-defenders/a-54298499, published 28 July 2020.

8 Around 65 billion farm animals were slaughtered globally in 2011 (Heinrich Böll Foundation, 2014), around 120 thousand farm animals per minute.

9 The lack of mental wellbeing of the production animals was discussed as an issue for the quality of meat already in the late 1970s (see e.g. Lawrie, 1977, discussing the effect of animal stress).

10 See e.g. https://www.worldanimalprotection.org/news/un-incorporate-animal-protection-2030-agenda-sustainable-development.

the FAO[11] Committee on World Food Security significantly included in their final recommendation, (in line with 2030 Agenda for Sustainable Development) considerations for animal welfare to be aligned with World Organization for Animal Health (OIE) standards and principles. It remains to be seen whether governments take note of these recommendations, and what that might mean in practice for the industry.[12]

Further on the ethical aspects of industrial meat production, as discussed above, the increasing industrialization of meat production in the Global South can be expected to significantly increase unemployment and poverty there (e.g. Tudge, 2017). This creates an ethical problem whereby the technology transfer (i.e. industrialization of meat production) transferred from the Global North to the South increases the welfare divide between the North and the South.

Last, but probably most importantly for the survival of humanity, the enormous *environmental impacts* of industrial meat production stem from the scale of production and lack of consideration for the secondary effects of using the inputs (e.g. land, oil, energy, fertilizers, water, feed, uniform agricultural plant and animal species) and the effects of secondary outputs (e.g. manure, wastewater), which cause air, water and ground pollution, in addition to increasing greenhouse gases, detrimental land-use change (through deforestation, soil degradation, erosion and desertification), and the associated depletion of natural resources and threats to biodiversity.

For example, the water footprint of industrial animal farming is considerable. Hoekstra (2017) gives one estimate of the water footprint of average diets in the Global North. An average meat eater's diet for one single day in the Global North costs 3600 litres of water, while an average vegetarian diet there consumes 2300 litres, still a considerable amount, but much less.[13] The pollution of waterways by fertilizers and manure is a problem not accounted for in these figures. In fact, more than 80% of the nitrogen inputs into animal agriculture are lost (Westhoek et al., 2011), impacting on terrestrial biodiversity in addition to increasing water pollution and disrupting the natural nitrogen cycle. Leach et al. (2012) conclude from their study on the effect of different diets on nitrogen losses to the environment that only a complete change to plant-based protein would result in a significant reduction of the nitrogen footprint.

Agriculture's contribution to greenhouse gas (GHG) emissions is often estimated to be up to a third of all emissions when fossil fuel inputs are included

11 The Food and Agriculture Organization of the United Nations

12 The FAO committee also made recommendations regarding several other negative impacts from the meat system.

13 The numbers for the Global South are lower, 2050 and 1750 litres, respectively (Hoekstra, 2017).

(e.g. Garnett, 2017). Importantly, this figure, however, does not include emissions related to the processing, transport, retail, and consumption of food, or the resulting waste. Industrial meat (and dairy) production has been estimated to contribute at least half of the total food impact on GHG emissions (e.g. Eder & Delgado, 2006), with the largest impact made at the farm stage. In 2006, the FAO (Steinfeld et al.) estimated livestock's contribution to all GHGs from agriculture to be as high as 80%. How much animal agriculture exactly contributes to the total of global greenhouse gases from all sources is still, however, controversial (see Box 2.1 for discussion).

Box 2.1. Contribution of the global meat system to greenhouse gases

The amount of GHG emissions related to animal agriculture has been a controversial topic especially after the FAO (Steinfeld et al., 2006) made their estimate of 18% of all global GHG emissions, including the impact of land-use changes.

The range of estimates made after 2006 is large, with Goodland and Anhang (2009) calculating a contribution as high as 51%, and the FAO recalculating their own estimate at 14.5% (Gerber et al., 2013), this latter number likely being the most often currently quoted. The Meat Atlas (Heinrich Böll Foundation, 2014:34) refers to a range from 6 to 32%, where the correct proportion depends on whether only direct (6%) or total (32%), so also indirect emissions, are considered.

The difficulties in making accurate estimations originate partly in the complexity of the issue, disagreements over which processes, inputs, outputs and impacts should be included, as well as methodological issues, and sometimes even political disagreements over e.g. the relevant time reference point for GHGs, especially methane, in the atmosphere. As Hayek (2019) notes, the errors present in the standard model estimations may not only be compounding, but also often go underreported. He notes that, "although emissions from the models are uncertain, [this] does not mean that they are wrong. It means that how wrong or right they are is unknown" (Hayek, 2019:4).

On a national level, the estimates vary a great deal, depending on the agricultural systems involved, the contributions from other sources of GHGs, whether emissions accounting is production- or consumption-based (for the last, see Wellesley et al., 2015:4), and the methods used. Similar disagreements as for the global level add to the uncertainties of the national estimates. National level comparisons may indeed be rather meaningless (Garnett, 2011). To give but two examples, for Australia, where especially beef production is highly emissions intensive, short-term (20-year) GHG emissions from all agriculture are estimated by some to be as high as 54% of all Australian anthropogenic GHGs, with animal agriculture contributing most of this (Beyond Zero Emissions, 2014). Further, Hayek (2019) estimates GHG emissions from

meat production with a so-called top-down method (measuring directly from the air) and concludes that for countries such as the United States, standard (bottom-up) model estimates seriously underestimate the emissions, due to the high level of industrialization of meat production there. As intensive animal agriculture continues its expansion, this same underestimation affects an increasing number of countries and regions Hayek argues.

These uncertainties (although rarely discussed as such) may have contributed to the uncertainty among the general public as regards the significance of the impact from meat production on climate change (see e.g. Austgulen, 2014; Wellesley et al., 2015), and it may have helped the global meat complex in creating a "safe space" for continuing its business as usual (cf. tobacco industry, Proctor, 2008). Further, using the highest global figure of 51% uncritically may undermine the credibility of some work by animal activists, or even critical animal studies as an academic field (Twine, 2014). In general, the wide range of estimates is likely to be partly due to certain lack of scientific rigour in the assessments that do exist, and partly due to politics being involved.[14] Although very relevant, the controversy about the numbers is, however, largely ignored in discourses (Twine, 2014).

Paradoxically, if the contribution of the meat system to GHGs is more moderate (e.g. 14.5%), reductions need to be radical to make an impact. Whereas, if the contribution is much larger, even a more moderate change could make a significant contribution to climate change mitigation, as also noted by Goodland (2014).

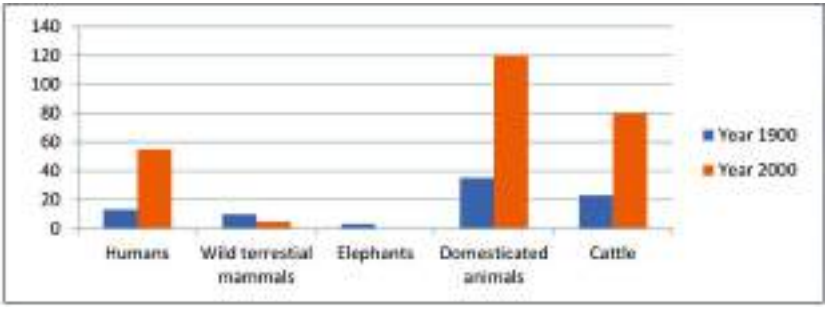
According to the oft-quoted estimate from the FAO (Steinfeld et al., 2006), 70% of all agricultural land and 30% of all land surface is used in livestock production, directly or indirectly. An updated estimate from Poore and Nemecek (2018) is that around 83% of all farmland is used for animal agriculture when including that used for dairy farming and aquaculture. With the associated continuing destruction of rainforests and grasslands, intensive meat production destroys the diversity of species and ecosystems. The third form of biodiversity, within a species (as opposed to between species or between ecosystems), is also threatened by the uniformity of livestock breeds used in intensive farming. Industrial livestock production, in the hands of a small number of multinationals and using only a small number of animal breeds, has, in the recent past, been growing seven times faster than small-scale farming in the Global South, according to the FAO (2007).[15] As a

14 See e.g. a 2012 column in the New York Times: https://bittman.blogs.nytimes.com/2012/07/11/fao-yields-to-meat-industry-pressure-on-climate-change/.

15 Gene banks are often seen as a solution for keeping the genetic variety of livestock and therefore providing resistance to diseases or challenging climate conditions. However, Gura (2010) notes that this may be creating only an illusion of safety. Frozen tissue in gene banks collected from disease-resistant animals cannot keep up with the adaptations that diseases

result, small-scale animal farming with diverse species is gradually being pushed out by intensive farming with uniform species (FAO, 2009).[16] All in all, meat production is the number one threat to global biodiversity and species loss (Machovina et al., 2015). Figure 2.3 illustrates the enormity of the global extent of animal agriculture. According to the estimate provided by Smil (2011), out of all the mammal biomass on land in the year 2000, only a tiny fraction consisted of wild animals, with around a third of total biomass being humans and nearly two-thirds domesticated animals.[17]

Figure 2.3: Global biomass of humans, wild terrestrial mammals and domesticated animals, 1900 and 2000



Source: Based on Smil (2011).
Notes: Data in million tonnes of carbon; estimates for humans, domesticated animals and cattle in 2000 are relatively the most accurate.

Relevant to the issues above, the *efficiency* with which the energy contained in the inputs in typical intensive animal agriculture is converted into energy in the outputs is exceedingly low. According to Smil (2002), for example, 97% of gross energy in the feed for cows in the United States is *not* converted into beef.[18] The European Union imports four-fifths of the protein-rich feed (Westhoek et al., 2011), therefore exporting the problems created by the high demand for energy and other inputs for the feed, as well as the problem of land-use change. Comparing the production and transport of 84 food items in a thorough review, Gonzalez (2011)

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themselves make in the real world, and climate change poses a threat to gene banks. New breeding technologies, such as cloning, further reduce the livestock gene pool.

16 Climate change further threatens small-scale animal farming, as severe draughts make pastoralists abandon livestock production (e.g. FAO, 2009).

17 Another recent estimate from 2018 (Bar-On et al.) confirms these proportions, with 4% of terrestrial mammal biomass being wild animals, 60% domesticated animals, and 36% humans.

18 For pork, the number is 91%, and for chicken meat, 89% (Smil, 2002).

concluded that animal-based foods are overall much less efficient than plant-based foods in terms of protein delivery when measured in energy use or emitted GHGs. A third of all calories and a half of all the plant proteins produced globally is fed to animals (Cassidy et al., 2013), instead of humans.

The vast increases in the production and consumption of meat observed in the last half a century, and the widely expected further increases for the future decades carry massive impacts. The future increases are generally argued to be related to the expected rise in world population to nearly 10 billion by 2050,[19] and expected increase in living standards and more intensive meat production, especially in certain countries in the Global South bringing about higher per capita meat consumption. Such increases in a business-as-usual system would greatly worsen the current negative impacts from intensive meat production and consumption, making, for example, addressing catastrophic climate change impossible (see e.g. Kim et al., 2015). The FAO estimate of 455 Mt for the level of meat production in 2050 is a 75% increase from the level in 2005 (Alexandratos & Bruinsma, 2012). If this production level would be realised without tackling the GHG emissions from meat and dairy, while simultaneously following the path to lower emissions from other sources so that the target warming level of 1.5 degrees of centigrade would not be exceeded, 81% of all global GHG emissions would come from the meat and dairy production (GRAIN-IATP, 2018).[20]

Considering the above, the FAO growth estimate does not, in fact, seem feasible within the current frame of science, technology and society. Transforming the meat production methods to adequately respond to the issues most likely has to be coupled with a radical reduction in meat production and consumption itself, if not an actual elimination of the current intensive meat production methods entirely. A recent estimate contained in Springmann et al. (2018) indicates that the planetary boundaries[21] would be far exceeded in the next decades without changes towards more plant-based diets. As Garnett (2017) argues, however, the issues described in this section need to be addressed in an integrated way, rather than by dealing with one problem, such as GHGs, at a time. In any case, alternative protein sources will likely have to be developed further, as well as incorporated into our everyday lives, on a large scale for a transformation towards a feasible future.

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19 A 2017 median estimate from the UN is 9.8 billion (from https://esa.un.org/unpd/wpp/Graphs/Probabilistic/POP/TOT/). To compare, in 1960, around the early stages of intensive animal agriculture, the world population was at 3 billion.

20 This scenario is relying on the potentially low 14.5% estimate of the current contribution to total emissions.

21 Planetary boundaries related to GHG emissions, cropland, blue water, nitrogen and phosphorus.

On the one hand, addressing this complex issue adequately seems a huge challenge, especially viewed from the production side; on the other hand, it would seem rather possible, and even "easy",[22] for people in the industrialized, or newly industrialized countries to experiment with, or adapt to new foodways for themselves, considering the motivating evidence against continuing with the current path. People could, in principle, gradually, if not abruptly, just eat less or no conventional animal-based meat, whenever they have alternative plant-based proteins to eat. However, food, or meat eating in particular, cannot usually be dealt with purely at a rational level, as firstly, eating any food involves many more non-rational factors such as social rules, cultural meanings, emotions, and values, secondly, it is largely one of the automated habits and path-dependent practices embedded in the everyday environment people live in, and thirdly, the related industries do their best to give us sub-conscious cues to get us to eat more meat. Further, most people do not want to stop eating meat (e.g. Wellesley et al., 2015; Zaraska, 2016a). Importantly, the topic of eating less meat is rather controversial, still a taboo subject in politics very recently (Lang et al., 2010), and even today "few governments talk even privately of 'hard measures'" (Lang, 2017:330) in meat policy in relation to issues such as climate change and biodiversity.[23]

In addition to formulating a conceptual outline of social practices more generally, this book will consider the role of discourses in connection with the abovementioned obstacles, and I will explore how discourses around the new meatways, in particular, could enable conscious and radical meat reduction, both at individual and at societal levels. However, first, the next sections will look at some available data on the past and current meat-eating practices, and what may have influenced the practices. I consider these issues relevant to this book, as they have an impact on discourses around meat.

22 See Goodland (2014) using the word "easy", or https://theconversation.com/reducing-meat-and-dairy-consumption-easier-said-than-done-or-easier-done-than-said-4317 by Richard Twine (in The Conversation, 24 November 2011) encouraging experimentation of different diets regarding meat.

23 One recent exception is the Dutch government which has started steps into reducing livestock in the country due to major issues with nitrogen pollution (see e.g. https://www.sciencemag.org/news/2019/12/nitrogen-crisis-jam-packed-livestock-operations-has-paralyzed-dutch-economy). What governments can do more generally is discussed further in Section 2.3.

2.1.2 About meat eating over time

2.1.2.1 A short history of (not) eating animals[24]

From prehistory of the human species, through the beginnings of livestock farming around 9000 BC (Nam et al., 2010), until around 1950 AD (Aiking, 2011), eating meat used to be considered a luxury for most people at a global level, rather than everyday practice. However, there has been a lot of variation in how much meat has been eaten. Firstly, cultural, geographical, and economic differences have had a role in eating, or not eating, meat for millennia, so that for example in Europe, the northern (Germanic and Celtic) cultures were consuming more meat than the southern (Roman and Greek) cultures, more dominated by agriculture (de Boer et al., 2006). Further, in medieval Germany, for example, the level of meat eating was very high for a considerable period of time, especially since people often got their pay in meat instead of money (Bork, 2006). More generally in medieval Europe, people ate meat whenever they got hold of some, and abstaining was seen as a sign of religious heretics, possibly leading to being killed (Zaraska, 2016a). In the United States, eating large amounts of meat on an annual basis was commonplace already in the early 19th century (Smil, 2013), due to the large amounts of wild animals and land for grazing cows, although meat was still more available for the wealthy than to the poor. In Argentina, the historically high consumption of meat in the last centuries has been largely a consequence of the Spanish invasion in the 16th century (Boyer, 2016).

York and Gossard (2004) emphasize the impact of the ecological contexts — factors such as climate and resource availability — and their link to cultures that have developed over time within each context. For example, in Asia, those living in coastal areas would be traditionally eating a lot of fish, those living in hot and humid climates would develop eating cultures around largely vegetarian foods. Medieval Japan, on the other hand, was largely vegetarian due to a shortage of land on which to grow food for domestic animals, although religion played a role too. Similarly, much of the Chinese diet was traditionally vegetarian due to lack of land, but culturally, China was more oriented towards eating meat (Zaraska, 2016a).

The advance of science in the Western world from the 17th century onwards strengthened the belief that humans must dominate nature, and around the same time, the average amount of meat eaten started gradually to rise. Associated with this were frequent claims from the scientific community saying that meat was a source of "strength and vigour", more so than any other foods. With the advances in refrigeration and transport technology in the mid to late 19th century, meat

24 This section will also cover some history of vegetarianism, as it is important for the discourses around both eating meat and not eating meat. Discourses as such will be the topic for Section 2.2.

consumption levels rose further (Fiddes, 1991). The 20th-century world wars ended up promoting meat as a prized food, preceding the meat industry's rise after World War II.

In human history, those who have not eaten meat have usually done so because they have not had any choice. For example, due to their poverty, many have not had access to meat, but when given the chance, they have happily engaged in meat eating. Moreover, there have long been those who have not eaten meat because of cultural, philosophical or religious reasons, such as the Pythagoreans in ancient Greek, or many Hindus in India. In present-day India, around 30% of the population report being vegetarians, according to an Indian government survey from 2014.[25] As Leahy et al. (2010) argue, those not eating meat out of religious reasons, for example, have generally not *chosen* to be vegetarians, but they have been born into vegetarianism. For example, in India, the principle of *ahimsa*, nonviolence, prohibits eating meat within much of Hinduism, Jainism and Buddhism, as harming animals makes a person spiritually impure (Zaraska, 2016a).

The estimate in Leahy et al. (2010) is that 22%, or around 1.5 billion people worldwide, are vegetarians, mostly out of necessity. In contrast, they estimate that out-of-choice vegetarians would number globally only 75 million, or around 1% of the current global population. While the proportion of out-of-necessity vegetarians may have decreased in the last years since these estimates, (see Section 2.1.3 and the discussion on the protein transition), the proportion of out-of-choice vegetarians is likely to have increased somewhat, trends recognized by Leahy et al. (2010) as well. Interestingly, the Faunalytics study (Asher et al., 2014) indicates that there are five times as many *former* vegetarians and vegans in the United States as there are current ones. If the same phenomenon is true at a more international level, there could be a couple of hundred million former out-of-choice vegetarians or vegans in the world.[26]

In modern times, abstaining from meat as a choice existed in some form in different countries, but as a larger movement it has roots in the United Kingdom going back to the late 18th century (Shprintzen, 2011), originally as part of Christian mysticism, but also as a means for curing medical illnesses. It spread from there to the United States in the early 19th century, by which time it had transformed itself to more a movement for social reform. Around the middle of the 19th

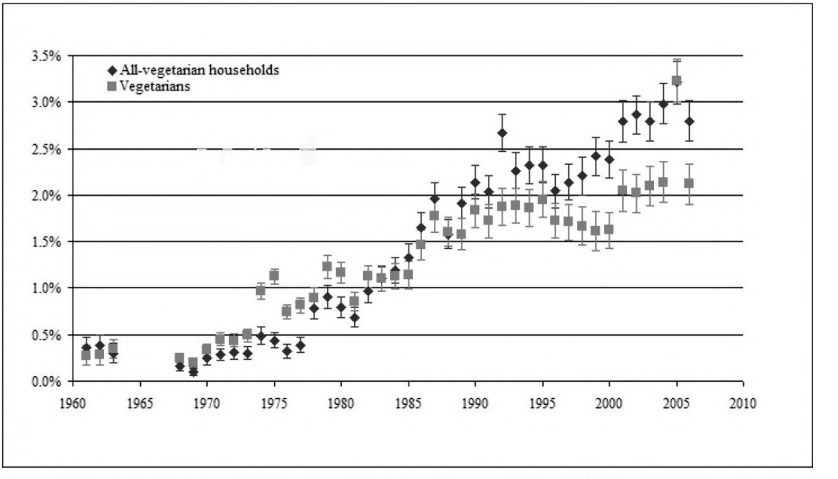
25 This data is from Office of Registrar General & Census Commissioner of India, sample registration system (SRS) baseline survey 2014, and covers all those above 15 years of age. The proportions vary between different Indian states from just over 1% to well over 70% of the population being vegetarian. Note that, in India, a person is *not* counted as vegetarian if s/he eats eggs.

26 According to the Faunalytics study, these former vegetarians and vegans currently eat mostly a flexitarian diet.

century, there was a period where resistance to the radical vegetarian movement created (in the popular media of the time) an image of vegetarians as "frail, weak and sexually impotent" (Shprintzen, 2011:9).[27] By the end of the 19th century in the US, however, vegetarianism "emerged as a way to build individual character and personal health in order to succeed in a society driven by personal gain and monetary advancement" (ibid.), and the lifestyle was connected to physical strength, fitness, athletics, individualism and masculinity. Although numbers of vegetarians remained small, there was a growing commercial interest, and food products (meat imitations) and vegetarian restaurants were marketed to consumers. During American involvement in World War I, meatless meals were encouraged by the United States government as patriotic, in practice saving more meat to be sent to soldiers in Europe.

Regarding ethical vegetarians, an early example includes Leonardo da Vinci (McCurdy, 1932, in Fiddes, 1991), and later on, in the 19th-century Europe, there was an anti-cruelty movement focusing on the immoral treatment of animals. The modern ethical movement is different from this, however, as it tends to put humans more at the same level as non-human animals, instead of assuming that cruelty is wrong only after absolute human needs have been satisfied, as was the case for the 19th-century movement.

Figure 2.4: Vegetarians over time in the United Kingdom



Source: Leahy et al. (2010).

27 Throughout this time, for the mainstream, meat was associated with strength (Fiddes, 1991).

The first vegetarian society (and the term *vegetarian*) was established in the United Kingdom in 1847, and the UK has the most longitudinal data to-date on estimates of numbers of vegetarians, dating back to the early 1960s (Leahy et al., 2010, see Figure 2.4). A 2016 estimate of the number of vegetarians in the UK is 3.25%.[28]

It is usual to categorize modern out-of-choice vegetarians into either mainly ethical vegetarians or mainly health vegetarians (Ruby, 2012), although the motivations people express for their vegetarianism often depends on the social situation in which they express them (Wilson et al., 2004).[29] People may be increasingly likely to make their actual dietary choices considering the entire variety of problems related to food production and consumption, therefore including the environmental issues (Spaargaren, Oosterveer, et al., 2012a). These problems are increasingly part of the current discourses around meat, explored later in this chapter.

Of late, there is an increased presence of vegetarianism and veganism in the public discourses (as discussed in Section 2.2.2). The meat consumption numbers still do not reflect this in actual eating practices, however.[30] The countries reportedly having the largest proportion of people identifying as vegetarians or vegans at the moment, apart from India, include Germany, Switzerland, Israel, Australia and Taiwan, all around or above 10%. However, the results vary from survey to survey and are unlikely to be comparable.

It is noteworthy that vegetarianism as a practice and discourse around vegetarianism are quite apart from each other. This may be partly due to this particular discourse being shaped more by those not actually engaging in vegetarian practices themselves, so for example, by criticism. As I see vegetarianism as an important counterpart to the meat system, I have covered it in this section and will cover it also in Section 2.2 about discourses. Moreover, as regards my empirical analysis in Chapter 5, I will briefly focus on vegetarianism there as an important theme in the discourse.

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28 See https://www.vegansociety.com/whats-new/news/find-out-how-many-vegans-are-great-britain.

29 A related issue, *motive alliances*, appealing to combined benefits of reduced meat eating to health, animals, and environment is considered to be useful (e.g. by Hartmann & Siegrist, 2017; Belz and Peattie, 2009; de Boer, Schösler et al., 2013).

30 FAOSTAT, the frequently used source of fairly comparable global data on meat eating, generally lags several years behind in its publicly available data. As of June 2020, meat consumption data is generally only available until 2013, and does, therefore, not show trends that might have taken place since then. Whether there is actually a decreasing trend taking place, globally or regionally, still remains to be seen. But an indication that the numbers for meat consumption may not have gone down much is that in countries such as Germany and Finland, the national level data shows that meat consumption stayed more or less stable until 2018, despite the vegetarian or vegan "trends".

2.1.2.2 The rise of industrial meat

The rise of industrialized animal agriculture after World War II, the associated increased availability and decreased prices for meat, the (especially US) government policies, as well as industry marketing and advertising, all encouraging meat eating, and the psychological distancing of animals from their flesh through the separation of industrial meat production far away from most people, all resulted in meat eventually becoming an everyday food item for nearly all those living in the Global North, and increasingly for many in the Global South. Regardless of the new everyday character of meat as a food item, it retained its central celebrated role at the centre of the plate. Apart from the enormous increases in overall consumption of meat, in what is lately called the *protein transition* (see Section 2.1.3), the most obvious change has been in chicken meat replacing beef to a significant extent. In other words, levels of per capita chicken consumption started rising faster from around 1990, near the time when per capita beef consumption started decreasing.

De Boer et al. (2006) argue that factors mainly related to globalization, such as increases in the equality of national incomes, global food trade, and internationalization of both industrial animal agriculture and eating habits, have evened out differences in meat consumption between countries, although many differences remain. Figure 2.5 shows trend lines for meat consumption for 12 different countries, representing a variety of societies and cultures from industrialized, or newly industrialized countries.[31]

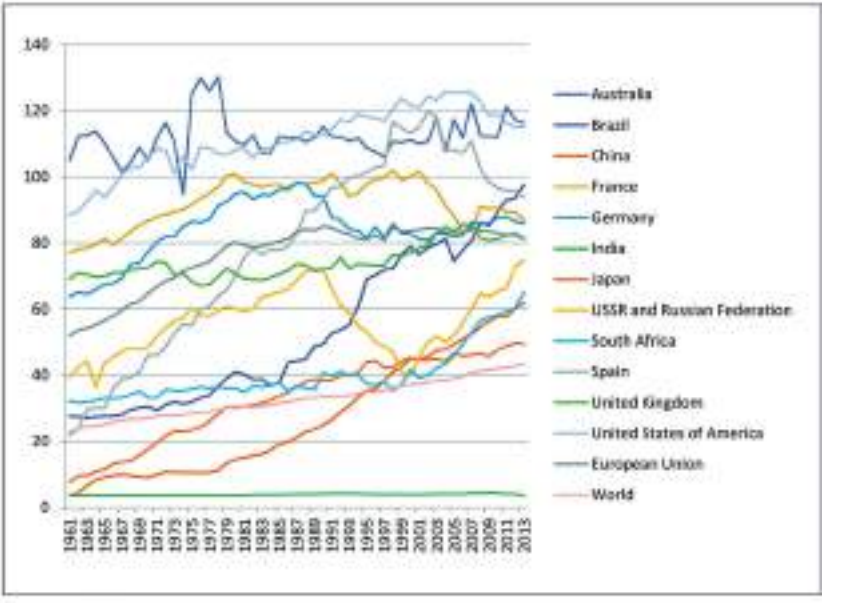
Excluding India where per capita meat eating has not essentially changed (but see later in this section), Figure 2.5 shows that most industrialized or newly industrialized countries have not only increased their meat consumption over the last half a century, but to some extent, approached each other's levels of consumption. Consequently, some of these 12 countries have stabilized their per capita meat consumption, and some are, in fact, consuming slightly less meat per person now than they were 5-10 years ago, while others have been consuming increasing amounts nearly throughout the 50 or so years.

In Europe in 2013, every EU citizen was "supplied" with 81 kg of meat on average, of which she/he actually ate about two thirds.[32] After a longer period of growth, the total per capita meat consumption in Europe has not changed much in the last 25 years, but there is still much variation between countries. For example, by the late 1990's the average Spaniard ate more than five times as much meat as he/she

31 These same countries are also those chosen for the first ever large cross-country survey on public attitudes on meat contained in the Chatham House Report (Wellesley et al., 2015), except that Italy and Poland have been replaced by Spain and Australia, adding more variety to the data.

32 See Box 2.2 for how supply and consumption figures are related.

Figure 2.5: Per capita meat supply in various locations from 1961



Source: FAOSTAT.
Note: Data in kg/person/year; data for USSR ends in 1991, and data for the Russian Federation starts from 1992; for the difference between supply and consumption, see Box 2.2; all food and agriculture-related data from FAOSTAT is available from 1961.

did in 1961 (at that time more along the lines of the Mediterranean diet[33]), but since around 2000, the consumption has come down somewhat. The average French or German eats slightly less meat now than they did 20-30 years ago. On the other hand, the average British person has eaten fairly stable and large amounts of meat throughout the half a century, although the average amount increased somewhat 10-15 year ago.[34]

33 The Mediterranean diet refers to food consumption patterns typical of some Mediterranean regions in the early 1960s, such as Crete, other parts of Greece, Spain, southern France, and southern Italy. The diet emphasizes relatively low consumption of red meat, among other things (Tyrovolas & Polychronopoulos, 2010).

34 The discourse data for the empirical analysis in Chapter 5 comes for the most part from the UK. The notable changes over the last half a century in the UK include a sharp increase in eating chicken, a slow decrease with sheep and goat meat — although the UK still remains one of the countries with most per capita consumption of sheep and goat meat — and a temporary dip in the 1990's (during the time of the BSE crisis) in the otherwise slower decline with beef. The pig meat consumption has remained rather stable throughout the time period.

Outside Europe, the average American and Australian have eaten the most meat compared to those living in the other 10 industrialized, or newly industrialized countries in Figure 2.5. Japan started from very low levels of meat consumption in the early 1960s, and currently, the average Japanese eats an amount just above the world average.[35] Lastly, China started from very low meat consumption levels in the early 1960s, well below the Japanese and at the same level as India, but has climbed steadily upwards, especially since the late 1970s, and the trend line seems to point to the average Chinese reaching the level of most Europeans in the next decade, unless the trends change direction in the near future.

Due to its still very modest level of meat consumption, India is seen by the global industry mainly as a potential future market for meat consumers, although a very large one at that. The per capita consumption of meat in India is projected by the FAO to grow six-fold, from an extremely low current base of 3 kg/year to around 18 kg/year by 2050, most of which would be chicken (Alexandratos & Bruinsma, 2012). Eating meat in India (or "non-veg", as meat is traditionally called there) is increasingly seen as part of a modern and successful lifestyle, with the appreciation for the meat-eating West replacing the previously highly valued Indian vegetarian elites (see e.g. Zaraska, 2016a). Further increases in industrialization, urbanization, growth of supermarket chains, mobility, and secularism are likely to drive growth. It is therefore currently more popular in India to change from veg to non-veg, rather than the other way around, although out-of-choice vegetarianism is an existing phenomenon in India as well. In fact, Bajzelj and Bothra (2016) refer to a "tug of war" between the veg and non-veg groups in society, tangled with the special status of cows, and going up all the way to the top political circles, illustrated by the 2017 attempt by the government to ban beef exports.[36] At the same time, the Indian governments have generally welcomed investments from foreign meat industry companies (Bajzelj & Bothra, 2016), and it is likely that, unless strong and swift political action is taken to prevent the formation of networks of global industrial actors (similar to developments in China), and an alternate path for future protein in India is chosen, the projections for growth may be realised. India's rapid

35 The Japanese differ from other industrialized countries in the world in their consumption of fish and other seafood. The average world citizen has been eating about twice as much meat as fish over the last decades, but the average Japanese has until lately eaten much more fish than meat, up to six times as much in the early 1960's. However, Japan is at a point in time right now when meat and fish consumption are at the same level, or in fact, for the first time in 2013, meat consumption was slightly higher than seafood consumption.

36 See e.g. https://timesofindia.indiatimes.com/topic/beef-ban.

recent rise to be one of the world's top beef exporters[37] is already a big challenge from a sustainability point of view.

An important point for the discussion about increasing global meat consumption is that the recent increases have not been evenly distributed among the *new middle classes* in the Global South.[38] For example, Lange (2016) notes that such increases are rather unevenly distributed, firstly, in the sense that many of the countries in the South are increasing their average meat consumption only marginally, whereas others are increasing it substantially, and secondly, within the higher meat consumption countries (such as China), there is a vast amount of variability, due to various cultural, geographical, political or other factors. However, in addition to the current individual meat eaters eating more meat, there is a large group of people, 1.45 billion, according to Leahy et al. (2010), who are not current, but potential future meat eaters. In other words, these people have been eating a vegetarian diet until now, mostly only out of necessity. This very large group of people could have a significant impact on future trends. In China, some of the substantial recent increases in meat consumption may have been due to the rise of the new middle classes there, benefiting from government policies opening markets to foreign investment in industrial animal agriculture since the late 1970s (MacLachlan, 2015).

Box 2.2. Between production, supply and consumption of meat

There are certain differences in how data related to meat production, supply and consumption is presented in various sources and publications, and what the numbers entail.

One relevant issue is how losses during the *food supply chain* are dealt with and reflected in the data. There are still large data gaps regarding how much food exactly is lost or wasted in the various food supply chains. According to the FAO (2011), about one-third of all food produced, and more than a fifth of meat, is lost or wasted globally, more or less equally in the Global North and the Global South. However, in the North, the main losses take place mostly at the end of the food supply chain, within distribution and consumption. These are defined as *waste*. On the other hand, in the South, the main losses take place at the beginning and middle of the food supply chain, in

37 FAOSTAT data indicates that over five years from 2008 to 2013, India's total meat exports tripled. These exports are almost exclusively of buffalo meat (categorized as beef), and India is now on par with Brazil as the two largest bovine meat (beef) exporters in the world.

38 The new middle classes in the Global South are not "rich" if measured against a Global North standard. Their average absolute income level borders the income of the low-income groups in the North. However, they generally have enough money to buy household appliances (TVs, computers, etc.), and meat.

production, handling and storage, and processing and packaging, together defined as *losses*. For the meat supply chain in the North, waste at the consumption level makes up about half of total meat losses and waste. According to the FAO (2011), as a total, about 24% of edible meat and meat products are lost in the European food supply chain for meat and meat products, between the farm, the dinner plate and the waste bin.

How losses and waste are considered in statistical data on food varies. The FAO *meat supply data*, used for the figures in this section, takes estimates of at least some of the food losses between production and household into account. However, losses during the consumption stage are not included, due to the lack of accurate data up to now. The FAO defines "food supply" data as estimates of food supplies available for human consumption, and remark that "it is important to note [...] that the amount of food actually consumed may be lower than the quantity shown", depending on the degree of losses and waste, e.g. during storage, in preparation and cooking etc. (http://www.fao.org). Presumably, also institutional waste occurring at the consumption stage (in restaurants, schools, hospitals etc.) is not accounted for, and it is unclear whether retail waste is included or not. The losses and waste not accounted for by the FAO can be estimated to be roughly 10-20%.

Finally, it is important to note that the FAO includes much of the bone in the animals in the meat supply data. The FAO data is expressed in *carcass weight* at slaughterhouse exit level (Westhoek et al., 2011). However, different animal species, different types of the same farmed species, and different cuts of the same animal all have different quantities of bone in them. Westhoek and colleagues give a rough estimation of a live cow consisting of about 45%, a pig 55%, and a chicken 60% of *retail meat*. Moreover, comparing retail meat to the FAO carcass weight data, the proportions for different species are 70% for cows, 75% for pigs, and 80% for chickens. Finally, the actual meat consumed after processing and cooking, and taking further losses into account, is around 80% of the retail meat.

In much of the literature using FAO data, "supply" has been taken to represent "consumption", and the latter word is used mostly in this book as well. To get the actual average human consumption based on the FAO supply figures, roughly a third should be deducted, so that the eaten meat is about 60-67% of the FAO supply data, depending on the species in question, according to Westhoek et al. (2011). To note, Hallström and Börjesson (2013) provide a critical discussion on meat consumption statistics and discrepancies within it.

After this review of the actual consumption trends, the next section will look further into potential past influences, along with potential future influences on how and whether people will use animals for food, mostly through a brief review of literature. Understanding influences on meat eating in the past, present or future are

relevant to the sustainability of human life on Earth. How could the global society respond to the meat crisis, radically reduce or change the way meat is produced or eaten, or perhaps eliminate eating animals altogether?

As the Chatham House Report (Wellesley et al., 2015) and others have argued, the necessary and radical future change in responding to the meat crisis cannot apply in just the Global North, where large quantities of meat animals have been used for food for quite some time already, but it has to also take place in the newly industrialized, or industrializing countries in the Global South, where plentiful meat is a much more recent, but often equally problematic phenomenon. The change must be global in its reach.[39]

Finally to note, the industrial production and largely unsustainable consumption of dairy foods, eggs, and seafood, in addition to the overuse of wild seafood, share many of the related environmental, human or animal welfare or ethical issues with those related to meat eating. A shift away from the overconsumption of also other animal-based foods to a more plant-based diet is therefore important (see e.g. Verain et al., 2015). However, these topics cannot be covered in this book, as the scale and scope of the work would be too large.

2.1.3 Potential influences on meat consumption

To some extent, it is possible to evaluate or measure what might have contributed to different levels or trends in meat eating, for example, the often, but not always upward trends in the last half a century, as shown by the graphs in the previous section. In the following, I will consider the discussion in literature.

The ***level of regions and nations***, or the ***global level***, is where changes up or down in meat production and consumption have their main impacts, and at this level, only larger and more persistent trends are significant. The discussion is largely based on connections (e.g. correlations) between different factors that could influence meat consumption. Critical literature on meat production and consumption has also grown in recent years around the growing awareness among the research, media and sometimes even policy communities of the enormous problems related to the global meat complex, as discussed earlier.[40]

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39 Important to note is that the low levels of meat consumption in the least economically developed countries in the process of industrializing often still reflect lack of adequate amounts of protein. Moreover, domesticated animals are used in these countries (as well as in some newly industrialized countries) for purposes other than meat or dairy (or leather, wool etc.), as labour or as economic security, for example, and discussion on changing this system would involve issues beyond the reach of this book.

40 Wellesley et al. (2015) provides an often-referenced report and discussion on the larger trends.

The most dominant factors regarding meat production at this level are often identified as linked to *demand*. There is an obvious demand effect from increasing population, and consequently more people needing food of any kind. However, apart from as a consequence of population growth, demand for meat is generally expected to increase (and these correlations are found) with an increasing *standard of living* linked to *urbanization* and a decreasing *price of meat*, with globalization regarded as the general engine behind much of the other factors, for example, through increased international trade and investment. These three factors are discussed in the sub-sections that follow.

The critical voices regarding this demand focus, on the other hand, are calling more attention to the influence from *industry*, either in terms of the industrialization process itself, in terms of lobbying pressure on governmental policies, in terms of influencing academic research (Nestle, 2018), or in terms of direct marketing and advertisement to consumers. These criticisms are partly incorporated into the following three sub-sections and partly follow as a separate sub-section on the demand vs. supply issue.

There are also *demographic factors* that are linked to the ***level of the individual*** and do not necessarily reflect differences at the level of nations or regions. These include education, age and gender. For example, older age and female gender have both been linked to lower consumption of meat (e.g. Lea & Worsley, 2001), and higher education has also been linked to lower consumption of meat (Regmi & Gehlhar, 2001). The level of the individual is crucial for change, and I will discuss it after the sections focusing on macro-level influences.

Further, *cultural factors* play a significant role in influencing larger trends in meat eating. At least within Europe, cultural and national differences in meat eating may be larger than the demographic or socioeconomic differences within cultures or geographical areas (Evans & Miele, 2012). Culture will be referred to in the following sections when appropriate.

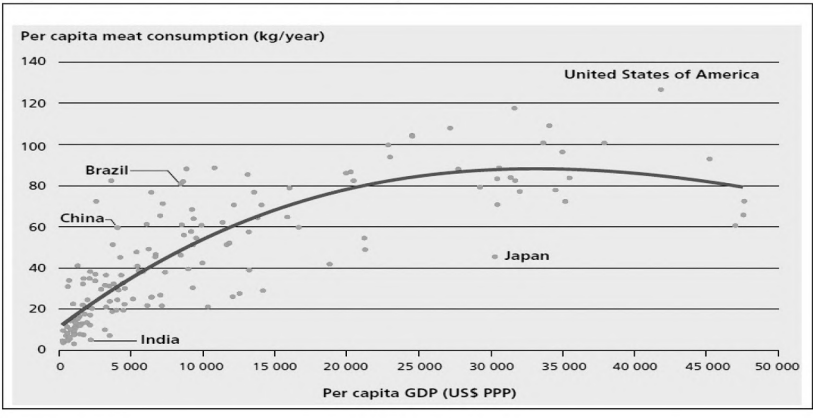
Finally, and partially linked to culture, further large-scale changes to the levels of meat consumption come from factors which can be seen at the ***level of discourse***. Here influential may be food scares, such as the BSE crisis in the United Kingdom in the 1990s, the more general unhealthy image of red meat, and concerns regarding factory farming or climate change. Importantly, discourses can be seen to integrate the individual level with the society, i.e. the regional, national or global level. Section 2.2 will explore discourses around meat.

2.1.3.1 Standard of living — The protein transition

Globally speaking, the biggest phenomenon to do with income and nutrition in the last decades is argued to be the *protein transition*, whereby meat consumption is said to rise together with the rise of economic development and rising incomes.

Although a rising GDP (gross domestic product) per capita — as an indicator of standard of living — may not be claimed to directly cause rising meat consumption levels, a positive association between GDP and meat consumption can be found (see e.g. FAO, 2009; Smil, 2002; York & Gossard, 2004), as the mostly rising curve in Figure 2.6 illustrates.

Figure 2.6: Protein transition — Meat consumption vs. GDP



Source: FAO (2009).
Note: GDP per capita is measured at purchasing power parity (PPP) in constant 2005 international US dollars.
Based on FAO data for per capita meat consumption and the World Bank for per capita GDP.

However, such a positive link (as in Figure 2.6) is more valid at the global level, and not nearly always seen at national levels (see e.g. Wellesley et al., 2015). The relationship between income and meat is, therefore, more complex, even when considering the protein transition an inherent development in human societies.

For example, it is acknowledged that sociocultural factors can have more influence than income growth, as can be seen from countries such as India and Japan (see Figure 2.5), where for India, the level of meat consumption has remained extremely low despite rapid income growth in significant parts of the population in recent decades,[41] and for Japan, where a moderate meat diet has prevailed to some extent, despite Japan being an overall high-income country already for decades. Further, the Chatham House Report (Wellesley et al., 2015) found out in their survey of 12 countries that affluent respondents in China and India (where historically meat has *not* been widely eaten) were more likely than lower earners to want to eat more meat, but in Brazil and South Africa (where meat *has* traditionally been

41 But see Section 2.3.1 for the future of India.

central), higher earners were less likely to want to eat more meat than low earners, similarly to many Global North countries, such as France, Germany, the United Kingdom or the United States.

Correspondingly, York and Gossard (2004) note that on average, people in the Global North and the Middle East have tended to eat more meat the wealthier the nations have become, whereas at least in some parts of Asia, people tend to shift towards eating more fish, rather than meat, when they become wealthier.

As argued by many by now, GDP does not measure human well-being adequately. To explore an alternative, Pradhan et al. (2013) analysed food consumption data in detail for the last half a century for all the countries in the world, using the Human Development Index (HDI) instead of GDP. Interestingly, they found that, similar to GDP, also HDI correlates strongly and positively with the consumption of animal products *at a global level*.

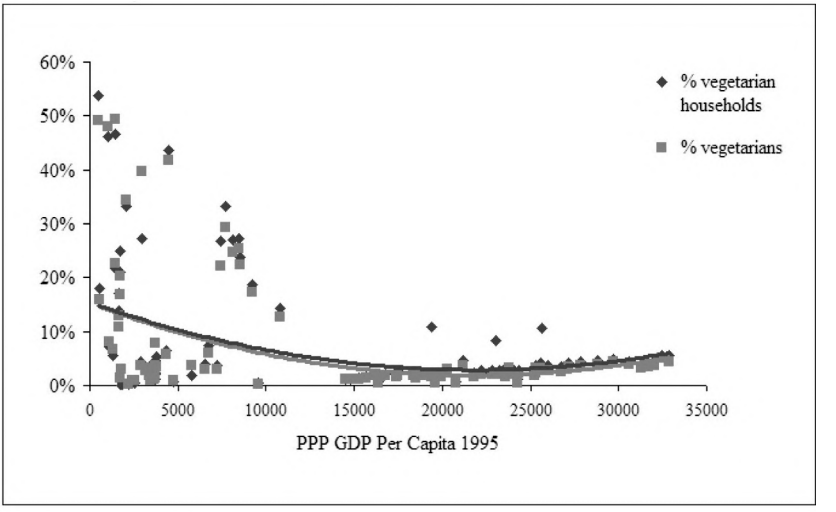
It has also been presented — and the curve in Figure 2.6 would also seem to support this — that meat consumption increases with income according to a Kuznets curve, an inverted U-curve (see e.g. Cole & McCoskey, 2013) or an S-curve (Keyzer et al., 2005; Westhoek et al., 2011), and this curve may already be in the downward or levelling off part in certain countries, especially in the Global North. At some point, so the theory goes, people with higher income cease to regard meat as a sign of wealth, or they start to view eating more meat in a negative light (for various reasons), and therefore, they reduce their meat consumption. According to Popkin (1999), the final stage of a five-stage nutrition transition (where different stages can also co-exist) in effect takes diets back to eating less meat, more unprocessed and simpler foods in general. This would also seem to be in line with the recent fairly stable, or slightly decreasing meat-eating trends, for example, in some European countries. However, for most countries, according to these analyses, the time to reach the income level where consumption would turn down would still be long, and much too long to help with the current global meat crisis (Cole & McCoskey, 2013).

Finally, Figure 2.7 shows results from a study estimating the number of vegetarians and comparing this to income levels at a global level. As can be seen, the inverted U-curve in Figure 2.6 above matches rather well with the U-curve in Figure 2.7, so that the rising part of the curve in Figure 2.7 could reflect the fifth stage of the nutrition transition (Popkin, 1999).

Leahy et al. (2010) distinguish between out-of-necessity vegetarians as those on the downward part of the curve in Figure 2.7 (eating meat when given the chance), and out-of-choice vegetarians as those on the upward part of the curve (increasingly not eating meat).

I would conclude that, while increased income may often lead to more meat being eaten (when it is available), the relationship is more complex, and so, this is by no means an absolute rule. The Kuznets curve, even if reflecting a real phe-

Figure 2.7: Vegetarianism and GDP per capita in different countries



Source: Leahy et al. (2010).
Note: In international dollars.

nomenon, is not, however, practicable as most people, or nations, have not reached the level of income at which meat consumption might start decreasing, as also noted by Cole and McCoskey (2013).

2.1.3.2 Meat prices

According to economic theory, and simply put, the lower the price of a desired item is, the more people will buy and consume it. Many (e.g. Rivera-Ferre, 2009; Westhoek et al., 2011) argue this to be the case with meat as well, in particular with lower-income population segments, and currently more generally in the Global South.

Similarly, when asked what people consider when buying food in a supermarket, price is often one of the top considerations, in addition to taste, health and food safety (see e.g. Wellesley et al., 2015). However, as discussed later in Chapter 3, most behaviour, including routine shopping, is automatic, driven by path dependency and subconscious decisions (based on intended or unintended cues in the environment at home or in shops). It may, therefore, be more that people *think* — or even that they prefer to answer a survey[42] saying that they think — they consider

42 See e.g. Hartmann and Siegrist (2017) for criticism about asking people's preferences about meat eating in surveys.

certain attributes, such as price or healthiness, rather than that they *actually* buy food items based on these attributes, and not some other attributes (such as the aesthetics of the packaging), while engaged in automatic behaviour.[43] In the Global North, prices are also considered to have less relevance for meat purchases than for some other commodities (e.g. PBL, 2008). On the other hand, there is some recent evidence that a tax on meat could be an efficient way to limit or reduce meat eating (Bailey & Harper, 2015; Springmann et al., 2016; Wellesley et al., 2015).

The falling trend in meat prices in the last half a century is most clear for chicken (see e.g. Rivera-Ferre, 2009) which used to be considered particularly luxurious meat still in the early part of the 20th century. At the same time, the last half a century has seen a steeper rise in chicken consumption over other meats in many countries, both in the Global North and South.

The sharp fall in chicken meat prices is, to a significant extent, due to the industrialization of poultry production since the 1950s in the United States and Europe (see e.g. Westhoek et al., 2011), and later also in the Global South, with the speed and scale of industrialization, and also the concentration and globalization (in terms of international trade) unparalleled by any other foods or food products (Marí & Buntzel, 2008). However, there are other, more controversial factors contributing to low meat prices, such as government subsidies, and intentional price dumping by the industry (e.g. Heinrich Böll Foundation, 2014). Also, the externalization of social, environmental or ethical issues arising from meat production in general keeps meat prices much lower than they would be, if these factors were calculated in (e.g. Gjerris et al., 2011). Fuchs et al. (2016) analyse in detail the power mechanisms at different stages of the meat supply chain artificially maintaining low meat prices.

The situation regarding artificially low meat prices is particularly extreme in the United States, as US agricultural policy, in terms of government subsidies to feed crops, makes feed grain and therefore meat cheaper than most other US foods. According to Donaldson (2016a), US meat is, in fact, cheaper than Chinese meat because of the subsidies. McMullen (2016) argues that Big Meat in the US has been supported by the government generally in three ways: with subsidies, advertising,[44] and nutrition advice.[45]

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43 However, most likely price nearly always has some influence on food purchases.

44 For example, the long running and still influential advertising campaign "Beef, it's what's for dinner" originated from a government supported advertising programme (McMullen, 2016:41).

45 Due to industry pressure, e.g. from the National Cattlemen's Beef Association (Simon, 2013), the 2015-2020 US dietary guidelines mainly failed to recommend eating less meat, although the advisory committee supported including a clear message regarding that (see e.g. http://www.npr.org/sections/thesalt/2016/01/07/462160303/new-dietary-gu-id-el-in-es--cr-ac-k--do-wn-on-sugar-but-red-meat-gets-a-pass). The advisory committee for the 2020-

In Europe, apart from chicken, meat prices have not decreased significantly in the last half a century when adjusted with a food consumer price index, i.e. when comparing changes in the price of meat to the changes in the average price of all food items. Kanerva (2013) correlates meat price and meat consumption data for several European countries and finds indications for some relationships between certain meats and certain countries. However, in the United Kingdom, for example, pork and sheep meat consumption have come down together with the prices, indicating that there may have been other, stronger influences on pork and sheep meat consumption. Rivera-Ferre (2009) has made similar observations for the United States from 1955 to 1995, where the consumption of chicken was correlated with price, but the consumption of beef and pork was not.

The policy of the Chinese government since the late 1970s of opening the Chinese market to foreign industrial meat producers (MacLachlan, 2015) has seen not only meat prices drop, but indeed consumption rise (in line with a governmental goal) to the extent that the government turned around in 2016, and issued new nutrition guidelines recommending only modest amounts of meat to be consumed, together with a campaign to curb the current excessive meat consumption, and its negative impacts on the population.[46] In China, lifting the population from poverty has coincided with a rise in meat production and fall in meat prices.[47]

Culture can, however, trump price, similarly to the case of the protein transition discussed above. Westhoek et al. (2011) explore the link between household expenditure and food culture. Southern European countries have traditionally spent considerably more money on food as compared to northern European countries, so, culture may have outplayed prices in southern Europe. Food in general has also occupied a more central place in people's lives in southern Europe, as opposed to northern Europe, where only in the last half a century food's cultural position has gradually gained importance (see also van Otterloo, 2012). De Boer et al. (2006) link this to the contribution of religion to food culture, as their study indicates that traditionally catholic countries in Europe have spent more money on meat than traditionally protestant countries, with the catholic culture appreciating meat specifically as a culinary pleasure.

A conclusion for this section is that meat prices are in many cases intentionally lowered to increase consumption, and while this approach often works (although

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2025 guidelines received criticism for ties to the food industry, see e.g. https://www.nytimes.com/2020/06/17/health/diet-nutrition-guidelines.html.

46 See http://www.fcrn.org.uk/fcrn-blogs/lucy-luo/new-chinese-dietary-guidelines-%E2%80%93-what-do-they-really-say-meat-consumption-and.

47 Recently, China has invested in cultivated meat, possibly seeing it as a partial solution for Chinese meat consumption (http://www.independent.co.uk/news/world/asia/china-israel-trade-deal-lab-grown-meat-veganism-vegetarianism-a7950901.html).

not always), the low prices are a significant problem in and of itself, as exemplified by the Chinese case.

Finally, I would note that price can, in fact, be seen as a supply factor. To explain, arguing that low prices push meat consumption up implies that the process does *not* start from increased demand pushing the industry to produce more (an argument often made), but from the lower prices produced by the industry creating the demand.

2.1.3.3 Urbanization

The degree of urbanization is generally considered to be strongly related to increased meat eating, through changes in lifestyles and diets overall, both in the Global North and increasingly also in the South (e.g. Rivera-Ferre, 2009). For example, double-income families, supermarkets and convenience meat products are linked to urbanization, and indeed, the enormous increases in the consumption of poultry over the last half a century are probably partly due to the convenience factor (Westhoek et al., 2011). Anderson and Shugan (1991) observed a while ago that the perceived high convenience was the main contributor for the shift from beef to chicken at that point in the United States, rather than perceived healthiness of chicken which is often argued to be the main cause for the switch. Likewise, Schroeter and Foster (2004) find that the higher the share of women in the workforce, the higher the consumption of chicken (and fish, which can also be quick to prepare) in the US.

With data for 132 countries, the regression results of York and Gossard (2004) indicate that urbanization generally does seem to increase together with not just chicken, but also total meat consumption. They, however, also emphasize that different geographical regions have had different impacts from the processes of urbanization. Rivera-Ferre (2009) remarks that the relationship between urbanization and increasing meat consumption is not as simple as it might seem, and urbanization is only one aspect in the expansion of industrial meat production. She argues strongly that the complex process is driven more by political and economic interests, than simpler forces such as urbanization.

In conclusion, although the standard of living, urbanization and meat consumption often rise together, and meat prices may have an inverted relationship with consumption, these trends may also be related to other simultaneous factors. Importantly, the industrialization of meat production through related factors, such as marketing and government subsidies for feed crops, may have both increased consumption and decreased prices. The following section explores further the basic chicken and egg question of whether demand for meat drives supply (as often claimed), or the other way around, as also discussed in literature.

2.1.3.4 Supply vs. demand

As an example, the report by OECD and FAO (2014:180) says that "it is mostly consumer preferences, together with income and population growth, that lead and drive the meat sector over time". This is still often an accepted paradigm, but some critical literature argues that consumer preferences are, in fact, largely created by industry marketing and advertising, and the availability of (convenience) products in supermarkets. Early criticism was provided by Galbraith (Galbraith, 1971, in MacLachlan, 2015).

Similar to Rivera-Ferre (2009) above, MacLachlan (2015) argues that the rising meat consumption especially in the Global South — often named the Livestock Revolution — is less a question of demand (from higher-income earners) and more a question of supply. In other words, the spread of both industrialized animal agriculture and supermarkets in cities in the Global South, combined with industry promotion, are driving meat prices down (while also driving grain prices up) and meat "demand" up. A similar process has taken place earlier in previously industrialized countries. He compares this supposedly "demand-driven revolution" to the Green Revolution which was "supply-driven" since it came about from the development of new forms of high-yielding cereal grains and technology transfer to the Global South. I would even argue that, unlike the Livestock Revolution, the Green Revolution could be seen as more demand-driven, since it was largely a response from the Global North to the food insecurity in the Global South.

Also Marí and Buntzel (2008) question the demand/supply relationship in meat. Rather than the increased demand creating markets for industrial meat production in the Global South, the intensification of meat production by large multinationals has created the markets that consumers have adjusted to. They argue further that the vastly increased international trade in chicken meat over the last half a century has also brought about an increase in chicken consumption, rather than the other way around. Rivera-Ferre (2009) also maintains that many development agencies have seen specifically industrial meat as a solution to both malnutrition and increased economic development in the Global South. Further, Zhou (2015) describes in detail how actions by the global meat complex together with government policies in the United States, China and Brazil (together called the Triangle) have shaped production and consumption in different, but equally demand increasing ways. The US has exported its successful model and related technology for industrial animal agriculture first to Brazil, and more recently to China, while also exporting large amounts of meat and feed (for Chinese meat animals) to China.[48] Brazil is the other major supplier of meat and feed to China. In both Brazil and China, the

48 In the early 2010s, the US domestic consumption of meat decreased due to increased exports, according to the USDA (Zhou, 2015). In other words, US consumption was driven by industry decisions to export to the new lucrative markets in China.

governments have seen the entry of the foreign (mostly US) meat industry as a very positive turn for their economies (see also Tian et al., 2016 for China).

One way to examine quantitatively the relationship between the growth of the global meat complex and consumption trends would be to look at developments in industry advertisement and marketing. Detailed data on industry advertisement or marketing expenses is, however, generally difficult or impossible to obtain from public sources, as companies are usually not obliged to disclose such data. Nonetheless, some research on the effect of advertising and marketing does exist. For example, Zimmerman (2011) concludes from his thorough review that both marketing and advertising have had a major, and perhaps the largest, impact on the obesity epidemic in the United States since the early 1980s, while excessive meat eating is related to obesity. Linking advertisement to meat eating directly, Brester and Shroeder (1995) performed a study whereby branded meat advertising had a clear increasing effect on meat eating.[49]

More generally, I would argue that it is not only the marketing and advertisement for specific meat products that increase meat eating, but these advertisements can be seen as a sign of the prevailing meat-eating culture (or carnism, see Section 2.2). Their mere existence is enough to have an impact on meat eating; if there were no advertisements, no marketing for any kind of meat or meat products, not in the media, and not in supermarkets or elsewhere, this could have a significant lowering impact on consumption, as it would likely play down the importance and visibility of meat. The acceptability and desirability of high meat consumption could also be lower in such a scenario, similar to the case of tobacco or alcohol advertising and marketing.

Finally, although often discouraging and challenging for sustainability, the demand paradigm — the default explanation by industries and also policymakers to the supply vs. demand question — could have an upside as well. Industries generally justify many of their actions by saying that the actions are a response to what their customers want. In some cases at least, this claim may be a way to justify either continuing with business-as-usual or doing something new. It can also be a form of "face saving", i.e. not having to admit that the industry needs some reorientation because of environmental reasons, for example. In the case of industries such as the global meat complex, it would indeed be quite possible in theory at least for the food industry as a whole to use such a face-saving justification for an orientation away from intensive animal-based food production, towards either

49 Nestle (2007) notes that the expenses on marketing and advertisement for any single nationally distributed food product in the US far exceed (often by 10-50 fold) the expenditure of the US government on the food pyramid, which supposedly promotes a healthy diet, as opposed to what the industry advertisements usually promote. See discussion on nutrition guidelines in Section 2.3.

(lower yield, but more pricey) extensive meat production, or towards some of the meat alternatives discussed later in this chapter. The scale of change necessary for the industry will be an enormous challenge, and all sustainable alternatives entail radical cuts to meat produced by slaughtering animals, as the Earth system cannot support current levels of meat consumption from organic or extensive meat production (see e.g. Stănescu, 2016).

2.1.3.5 The level of the individual

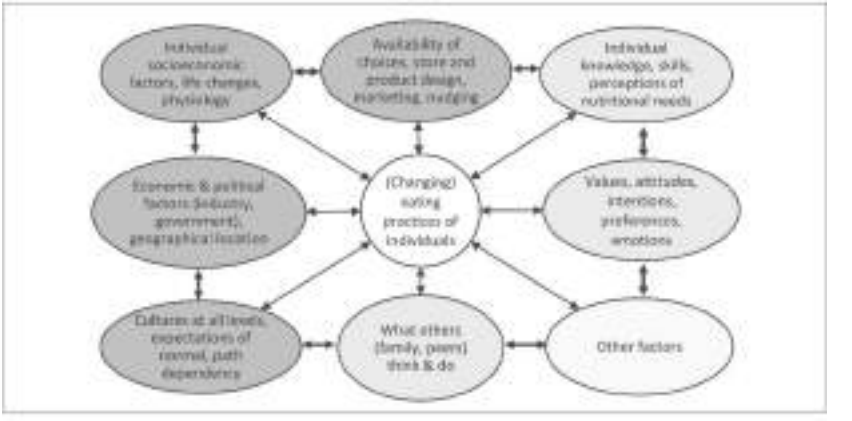
Factors, such as industrialization of meat production, lower prices, and pervasive industry influence, urbanization, increased income, globalization of Western food culture,[50] all indeed have had the potential to increase meat eating, at least to a point. Further, political factors, such as agricultural and food policies, often influenced by industry, and demographic factors, such as age, gender or education may play a role in influencing the level of meat consumption. Finally, food scares or concerns regarding factory farming, health or climate change can run counter to the increasing trends, with some potential to reduce meat eating, or to reduce some environmental or health impacts from eating meat, such as with a switch from eating beef to eating chicken.

Focusing on the level of the individual, all the different factors — and many others not discussed above and beyond the scope of this chapter — combine. Figure 2.8 illustrates different possible influences on meat eating at the level of an individual person.

Figure 2.8 demonstrates how complex the situation is. As regards quantifying the influencing factors, some of them, such as economic factors, can be fairly easily quantified. However, others, such as cultural factors, are difficult to measure, although they can be described. Some tacit factors may not even be describable, let alone measurable. Importantly, the factors also influence each other. For example, one's gender or life situation, or availability of money, will have some effect on how much importance the availability of different options in the shops has, and individual values regarding animal ethics will have some impact on how much the national food culture influences one's meat-eating practices. Balancing between different needs or values, for example, between family and animal ethics, or between cost and taste, also plays a very relevant role (see e.g. Evans & Miele, 2012; Sobal et al., 2006). Many factors often do not directly affect how people eat meat, even though they play their often very relevant part in the bigger picture. However, Shephard and Raats state that:

50 A Western diet is defined e.g. by Popkin et al. (2012:6) as "high intake of refined carbohydrates, added sugars, fats, and animal-source foods".

Figure 2.8: Influences on meat-eating practices at the level of the individual



Source: Figure by author.
Notes: The arrows are only illustrative, and mostly very little of the interconnecting relationships is actually known; the factors marked darker are discussed more in this section, and most of the factors marked in lighter grey are discussed more in Chapter 5.

> …because human food choice is influenced by so many potential factors, there is often a tendency to look at the impact of these factors in isolation rather than trying to arrive at some overall understanding of the interplay between different types of influences.
> Shephard and Raats (2006:ix)

The sheer number of factors, their qualities, and their complicated relationships with each other, make it, therefore, impossible to quantify such a model. It is largely a question of "drowning out by numbers" (Kasper, 2015:29).

To view the issue through a social practice lens, as in Chapter 3, the web of overall factors, as in Figure 2.8, is what makes how people act or behave relatively stable, but it is also what makes practices change on their own over time when different factors change. As Shove et al. (2012) argue, this coinciding stability and change is typical for social practices, of which meat eating is one. However, the crucial question for the near future is how the patterns of many unsustainable practices, including meat-eating related practices, could be purposively and radically changed.

Intentionality can originate top-down or bottom-up, or both. Firstly, it can come from policymakers, advocacy groups, or other macro-level actors, through thinking in terms of the above factor model, whereby individuals could be influenced with or without their explicit awareness. For example, attempts to motivate people towards different behaviour as regards climate change mostly take place

through information sharing and appeals to fear (Hunter & Röös, 2016). Choice architecture also belongs to a top-down approach to behaviour change. However, there are large scale phenomena that prevent such methods from creating the desired change. For example, society is often blind to the countering effect of the most dominant values present, such as the importance still based on (increased) consumption. Generally, decades of research on values (see e.g. Maio, 2011; 2017) has shown that values — or more specifically, value priorities and value dispositions — do matter and they are important for behaviour.

Secondly, change can also originate from the bottom up, from ordinary people. With nearly all practices, however, such bottom-up change can be — and has to be for real and more extensive social change — enabled by, or combined with support from other societal actors, such as policymakers, the industry or various advocacy groups.

An example regarding bottom-up change in eating practices is related to the debate regarding whether those eating only a little meat (flexitarians) or no meat (vegetarians or vegans) have any agency to influence larger trends towards eating less meat. Is the (future) supply of the new meats offered by the industry the only way for ordinary eaters to have an impact within a capitalist system? Some maintain (e.g. Spiller & Nitzko, 2015) indeed that flexitarians or vegans have little market power, as compared to intensive meat eaters. The "humane meat" producers[51] even argue that such people are worsening the situation, by not eating meat and thereby not being able to "vote" as effectively via their purchase behaviour (Stănescu, 2016). However, an individual decision for eating less or no meat, and therefore, for example, pulses, is not a passive act, but an active choice for a different vision of future (idem). These eaters have citizen power, or agency through their choices (Spiller & Nitzko, 2015).

This citizen power may be realised, however, only to the extent that such actions are in some ways public. Therefore, essential elements for intentional and lasting change — i.e. not dependent on situational factors such as choice architecture — include *discourses*, as I will argue further in Chapter 3. Discourses connect the macro level of society to the micro level of the individual, or put in another way, as van Dijk (2015:469) says, "language users as social actors mentally represent and connect [society and discourse]". Discourses can be seen as a prerequisite to an awareness of problematic practices and their solutions — whether at the level of individuals or at the level of societies — especially since discourses can also lead to an increased awareness of potentially conflicting values, emotions, and knowledge.

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51 Meat producers, mainly in the US, who call themselves "humane meat" producers, produce mainly organic meat. However, the US market has not been well regulated in this respect, and these producers have received a good deal of criticism for being manipulative towards consumers (Stănescu, 2016).

Without acknowledged awareness, purposive and lasting change at the individual or societal levels is unlikely. Section 2.2 will, therefore, explore recent and current discourses on meat.

2.2 Meat related discourses

In Section 2.1, I touched on discourses around eating, and not eating meat, as, due to the values and emotions attached to eating, it is not really possible to discuss the history of meat without mentioning what eating, or not eating animals has meant to humans over time. In this section, however, I will briefly cover the discourses over the last half a century and then focus on the present day. Chapters 3 and 4 will discuss further the role of discourse in society.

2.2.1 Rise of discourses

Nearly 30 years ago, Fiddes (1991) noted that meat eating could be considered just as ideological or political an issue as vegetarianism, as it involved an abundance of social rules and meaning. He went on to say that, consequently, the habit of meat eating required justification just like vegetarianism, and it could not therefore just be passed as something obvious. It should rather be a conscious choice.

When questioned, meat eaters have generally justified their diet as something natural, traditional or necessary for humans. In prehistory, meat eating is argued to have been an integral part of the development of our species (e.g. Zaraska, 2016a). Meat was also considered necessary for religious reasons (e.g. Swatland, 2010), and nowadays people often justify their practice simply because meat tastes good, and it is an important part of social eating. These lines of thought go back a very long time. However, before the rise of industrial animal farming, there was a certain "eat with care" attitude to eating meat (Foer, 2009).

For our age of industrial meat, Joy (2010) talks about the three Ns of justification regarding eating meat: Normal, Natural and Necessary. People have internalised these so well that the four Ns have usually been considered truths rather than opinions, and therefore, any moral considerations regarding eating animals have not even entered the picture for most people. Joy introduced the term *carnism* to indicate the culture, or the invisible belief system of meat eating, and the discursive hegemony that the culture of meat enjoys. Piazza et al. (2015), add a fourth N for Nice to the three Ns from Joy.[52] Further, Monteiro et al. (2017) develop

52 Some of the literature discussing the three or four Ns use capital initials. I decided to use these as well, in particular since I see these concepts as frames, and frames are often capitalised in frame analysis (see later in Chapter 4).

a distinction between *carnistic defence* (justifying meat eating) and *carnistic domination* (justifying killing animals for meat), with the first relating more to Normal, Necessary and Nice, and the second more to Natural. Before the term carnism, other authors, in addition to Fiddes above, have linked meat eating to an ideology. Adams (e.g. 1991) claims that meat eating has become an ideology whereby the ideology itself makes meat eating appear natural and predestined. Indeed, she argues that killing animals for food has changed from something we do to them into something that is "part of animals' nature" (idem:135). Palmer (1997) includes an early discussion of human domination over domesticated animals potentially being legitimized through a *social contract*.

Meat eating has traditionally symbolized masculinity, strength, higher socioeconomic status, and human dominion over nature (e.g. Allen & Baines, 2002; Ruby & Heine, 2011). There are some signs, however, that the image of meat may be changing (e.g. de Bakker & Dagevos, 2012; Ruby, 2012), or that the symbolic meaning of meat could even be successfully manipulated (Allen & Baines, 2002). The ideas of what is "normal" tend to shift considerably over time (Shove, 2003; see also Chapter 3), so has also the meaning of meat changed and will continue to change.

As mentioned earlier, meat, and especially red meat, has been discussed negatively, not only in academic literature but also in many media stories, especially concerning its healthiness. However, conflicting dietary advice for health, and especially weight loss, can be found in many places, especially in popular media, with governmental dietary guidelines being only a minor source of information for many people who tend to be persuaded simultaneously to two, often opposite directions. On the one hand, people have become more conscious about the links between eating habits and health, encouraging them to follow a diet less heavy on meat, among other things. On the other hand, certain popular diets have pulled some health-conscious people towards eating more meat. In particular, the "low carb" diet has often been understood as a high-meat diet. Coinciding with the rise of such diets, also the so-called lipid hypothesis (i.e. that saturated fats and blood cholesterol are major factors in cardiovascular disease) has been questioned, even in some scientific literature (e.g. by Siri-Tarino et al., 2010).

Clear cultural differences have been seen in the discourse. Halkier et al. (2007) make a comparison between four European countries in terms of the discursive framings of food consumers and conclude that there are fairly large national or cultural differences within Europe. Further, they argue that conflicts in northern European countries may be more between different food-related issues, such as food safety, quality, nutrition and ethics, while in southern European countries they may be between different types of actors, such as public authorities, the food industry and the retail sector. Likewise, Kjærnes and Torjusen (2012) find some regional differences in that, people from southern and eastern Europe tend to be lately more pessimistic about food than especially Scandinavian consumers. More-

over, a comparative study by Bauer et al. (2006) in Germany, Finland, Italy and the United Kingdom on the impacts of the BSE crisis illuminates, how national media influences the perception of risk.

Priorities and framings also change over time as a result of changing practices, scientific research, and public debates. Framings of food (and often, meat) related concerns in general have varied a lot just in the last half a century. In the 1950s and 1960s, they were mostly about safety, convenience and prices, in the 1970s and 1980s, about fertilizers and pesticides, in the 1980s and 1990s, about risks and taste, and in the 2000s, about animal welfare and fair trade (Spaargaren, Loeber, et al., 2012).

Often in the last decades, public and media discussions around meat eating have largely arisen from issues related to intensive animal agriculture. Larger health scares, such as the European BSE crisis in the 1990s, the avian influenza epidemic taking place mostly in Asia from the early 2000s onwards, or more local crises of meat contamination with dioxin or other toxins, have generated much discussion which has often led to a wider debate on the issues related to a diet relying heavily on eating meat. The COVID-19 pandemic has largely been blamed on both live animal markets widespread in certain countries, and on the global destruction of the natural world, often for industrial animal farming.[53]

Several narratives have existed for significant time already as to how problems related to the global meat complex could be solved while continuing to consume meat from slaughtered animals. Organic meat has been a popular answer to those concerned with industrially produced meat. However, as mentioned earlier, large scale organic meat production shares many of the same problems as conventional production, especially in term of climate change or deforestation (e.g. Foodwatch, 2009; Steinfeld et al., 2006), and organic meat producers can also deceive consumers by marketing "humane" meat from "compassionate" farmers with few regulatory constraints (see Stănescu, 2016). Further, grass-fed cows have been suggested even as a solution to the contribution of meat to climate change (by the grazing locking away soil carbon), and such discourse has been popular online as well. This account has, however, also been firmly disputed (see a thorough review of the issue by Garnett et al., 2018), although there remain arguments that a *small* number of *well-placed* grazing cows may be relatively harmless as regards climate change (see Garnett et al., 2018; Röös et al., 2016). There is another popular "less, but better" narrative which acknowledges the array of serious problems, and the urgent need to find solutions, but aligns with the paradigm of the necessity of meat eating. An example of this is the Eat well -campaign in the United Kingdom. The idea is that decreasing meat eating, and concentrating on better quality, i.e. less

53 See e.g. https://www.theguardian.com/world/2020/mar/25/coronavirus-nature-is-sending-us-a-message-says-un-environment-chief

intensively produced meat, can help solve the meat crisis. Although this is an appealing idea to many, and probably designed to cause less antagonism (Santini et al., 2015), the lack of radical absolute reductions in this model, however, casts doubt on its viability as a sustainable global solution. The question is about quantities: a truly small amount of grazing cattle could be beneficial, if it would replace the current mass production of beef. The focus of any such "less, but better" -campaigns would, therefore, better be more strongly on the "less", rather than the "better".[54]

The FAO prediction of 75% increase in the demand for meat by 2050 carries a message of "people will want meat", and assumes that there cannot be a radical reduction in the meat that people eat globally, and more generally, that humans have to keep eating animals. Even though this business-as-usual approach requiring growth of production is also criticized by food production-related organisations (see Soil Association, 2010), the growth paradigm is also included in at least some of the alternative meat discourse.[55]

Less visible in the public discourses have been, on the one hand, the answer from the global meat complex and from some international organisations to the anticipated increased future demand for meat, and, on the other hand, their answer to the contribution of meat production to climate change. The suggested and researched solution to the issue of demand has been to make intensive animal farming even more intensive, widespread and efficient, and the answer to the issue of climate change has been to intensify science's focus on developing animal breeds, or animal feeds that are less harmful in terms of the production of GHGs, so for example, reducing the methane emissions from cows (e.g. in many FAO reports on the issue). This discourse, especially related to the increased intensity, has largely stayed out of the media focus, and presumably might not always be well received by the publics. Neither would all stakeholders necessarily want to draw attention to the realities of intensive animal agriculture. However, as for example, Garnett (2011) or Springmann et al. (2018) conclude, it is not possible to make the meat system efficient enough to take account of climate change. Reductions in consumption must be an integral part of the picture. Further, the assumption that intensification significantly decreases GHG emissions from extensive animal farming has also been called into question (see Hayek, 2019).

Despite the narrative of especially red meat being bad not only for humans, but for the environment as well, no very large scale, or radical changes in the image of

54 Some, for example de Boer, de Witt et al. (2016) argue, however, that switching to eating organic meat can have positive spillover effects to other, more environmentally beneficial behaviours.

55 See for example Paul Shapiro, Vice President of Policy, the Humane Society of the United States, and a self-declared vegan, talking at a Stanford University panel discussion on cultivated meat at http://www.gfi.org/stanford-on-meat-without-animals.

meat have been widespread until now, as the Chatham House Report's (Wellesley et al., 2015) findings about (especially red) meat in the United States still being strongly associated with being American demonstrate. Similarly, all the different discourses on ethical and other problems related to eating animals have not, until now, led to a more permanent increase in the numbers of vegetarians, which in Europe, for example, have ranged in recent decades from around 1% to between 5-10%, or vegans which number generally under or around 1% of a population.[56] Temporarily, these numbers have changed, e.g. in France, the share of vegetarians rose reportedly to 6% around 2001, possibly as a consequence of the BSE crisis, but soon after, the figures fell towards what has been more typical for modern day France, i.e. only 1-2% of the population (Kjørstad, 2005).

Additionally, there have been narratives countering the superiority of a vegetarian or vegan diet, as regards environmental impacts from the food system. For example, the *vegetarian myth* (Keith, 2009) claims that vegetarians or vegans falsely believe that their diets can be a solution to the crisis of industrial animal agriculture. Further, there has been a debate on whether those eating grass-fed animals or those eating no meat end up killing more animals, with the arguments being between accidental killings during plant harvesting and intentional killings in animal agriculture, a discussion largely initiated by Davis (2003), and mostly revolving around ethics. While convincingly aiming to end the fight as regards numbers of animals killed, Lamey (2007) points to the new discourse over not *whether* animals deserve protection or not, but *which kind* of protections produce the best results. He points out that field animals do get killed even within the production of a vegan diet, in other words, his argument is for the importance of choice in farming methods. He further emphasizes that "not all meats are created equal" (idem:344), so that, while both produce the same amount of meat, killing 100 chickens is ethically worse than killing one cow.

The disconnection between meat production and consumption is largely due to the industrialization of meat production and the growth of supermarkets. Gouveia and Juska (2002:384-385) argue that the popular media has been falsely reconnecting production and consumption by "framing food and cooking as a lifestyle" by discussing, for example, seasonal and locally produced foods, or engaging celebrity cooks to visit rustic small farms, while in reality, most eaters are still faced with the same industrially produced supermarket meat. In this narrative, the reintegration of production and consumption is, therefore, made into a matter of individual

56 The numbers also depend on the definition of what counts as a vegetarian or vegan diet. Unfortunately, there is sparse longitudinal or geographically comparable data available on the share of vegetarians or vegans in different countries, and the estimates tend to be using different definitions, and carrying various methodological issues with them.

choice, while actually the two realms are perhaps even further distanced from each other with this framing.

As the following section will discuss, the (conscious) awareness of the enormously challenging and critical issues related to the current meat system is still low among most people, but has increased in the last years in the scientific community, some media outlets, and even within policymakers and the industries involved. New solutions have been considered, and new discourses have been born, taking some of the focus away from more modest or incremental changes to the system, or the narratives that are based on disputed science, to more radical alternatives. As a result, the older discourses mostly keep on existing while new discourses are born, and so, the numbers of different, and often contradicting, narratives around meat are increasing in the public sphere.

2.2.2 The new discourses

There seems to currently exist new and diverging narratives, or discourses, around the various solutions to the meat crisis, at least in the Global North. Two of the most obvious strands include, on the one hand, the necessity of overhauling the current meat system, and on the other hand, apparent denial of the need for large-scale changes. The *new meats*, such as cultivated meat, plant-based meat, or insects, as well as flexitarianism — as an additional *new meatway* — are an important theme in the first strand of discourses.

Firstly, there is a great deal of excitement among start-up businesses developing cultivated or plant-based meat,[57] major investors,[58] and organisations[59] involved with the start-ups in building the new industry (see the next section and Table 2.1 for more on some of these developments). There is a degree of hype

57 The developers of meat analogues have developed the term *plant-based meat* to emphasize the fact that these products aspire to resemble meat in every way, the only exception being that their origin is from plants, rather than animals. Recent terms used by the companies developing meat cultivated from animal cells are *cellular agriculture* (from 2015), *cultured meat* (around in wider discourses from around 2016), *clean meat* (from 2016), and *cell-based meat* (from 2018). *Cultivated meat* is the latest term, entering the wider discourses only in 2019, judged to be the most appealing term, based on consumer research performed by the Good Food Institute (see https://www.gfi.org/cultivatedmeat). I mostly refer to cultivated, plant-based and animal-based (conventional) meat in this book. See Chapter 3 for some more discussion on the names.

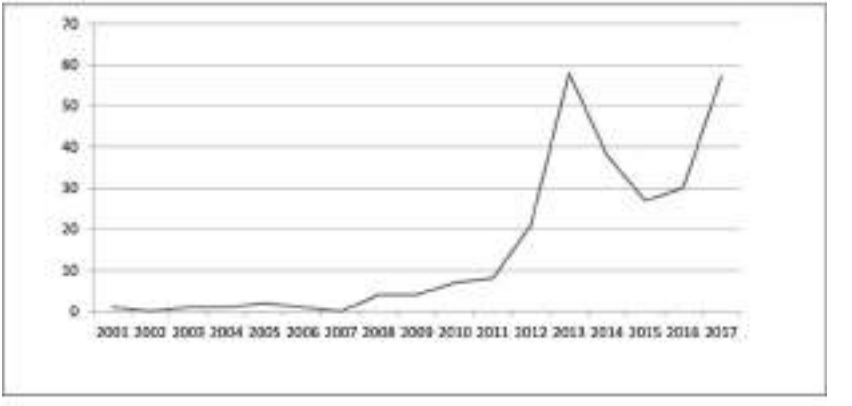
58 See e.g. FAIRR (2016), or https://www.cbinsights.com/research/future-of-meat-industrial-farming/.

59 Such as the Good Food Institute (www.gfi.org) and New Harvest (www.new-harvest.org), promoting the alternatives, and financing research in cell- and plant-based meats.

attached to these alternatives. Some policy circles are supporting these developments,[60] and through increasing media reporting in recent years, many citizens have had a chance to learn about the new potential directions.

Figure 2.9 shows the number of articles in the Guardian newspaper on different alternatives to eating conventional meat (including insects and flexitarianism, discussed later). The media event in 2013 where the first-ever cultured beef burger was prepared and eaten in London caused the peak around that year. However, the overall trend is clear. The number of articles was rising between around 2007 and 2017.

Figure 2.9: Number of mentions in the online Guardian of different alternatives to eating conventional animal-based meat from 2000 to 2017



Source: Based on the Guardian archives.
Notes: The keywords used in the search for articles include the following: "cultured meat", "artificial meat", "lab-grown meat", "synthetic meat", "in-vitro meat", "clean meat", "eating insects", "plant-based protein", "impossible burger", "beyond meat", "flexitarian", "reducetarian", "semi-vegetarian", "meat alternative"; many articles mention several such keywords, therefore the numbers do not refer to the number of articles, but to the mentions of these keywords; the term "cell-based meat" was only invented in 2018, and "cultivated meat" entered discourses outside academic literature mainly only in late 2019, therefore, these terms are not included in the search.

In these discourses, conventionally produced meat from slaughtered animals can actually be seen as the "wrong technology" to produce meat, "convenient, but incredibly inefficient", and the future Earth citizens may look back at people eating animals (for their flesh) as something weird and archaic.[61] However, more of-

60 For example, at the EU level, a research project called LikeMeat (Likemeat.eu) was EU-funded. Further, the Dutch government has funded research on cultivated meat (see http://www.new-harvest.org/mark_post_cultured_beef).

61 From Pat Brown, the founder of Impossible Foods, on BBC programme The Inquiry in January 2017.

ten cultivated meat creates controversy, with the discussion often moving from stronger initial reactions of disgust, or "wow", to concerns for health or social consequences on the one hand, and environmental and ethical benefits on the other hand (see e.g. Laestadius & Caldwell, 2015; Onwezen & van der Weele, 2016; Verbeke et al., 2015). The perceived unnaturalness and high-tech character of cultivated meat, and the perceived naturalness and low-tech character of (intensively produced) conventional animal-based meat, are also apparent in the discourses. On naturalness, Ethan Brown, the founder of one of the new plant-based meat companies has argued that intensively produced conventional animal-based meat has already become "artificial", as it is, in fact, so unnatural (Stănescu, 2016).

Special about the discourses around the new plant-based meats is that these products are not aimed so much at vegetarians or vegans, but at those who until now have been conventional meat eaters, i.e. the majority of people.[62] Similarly, cultivated meat is not presented as another product for vegetarians or vegans, but for non-vegetarians, although Hopkins (2015) argues that the media may sometimes do a disservice by assuming otherwise.

Another narrative is built around eating farmed *insects*, as something exotic and good for us. Since the technological input is much smaller, and since insects represent something either formerly, or currently, rejected (mostly in the Global North), something mundane, or something very traditional (in some parts of the rest of the world), the excitement, or the hype — related to other promising, but more technological solutions (such as cultured or new plant-based meat) — is less obvious, although still existing. Largely, the initial reception by the publics in the Global North has been disgust (e.g. Looy et al., 2014). Insect start-ups tend to be dwindling businesses in many cases (Ana C. Day, personal communication, 9 April 2016),[63] although policymakers in the Global North are gradually making an effort to accommodate them.[64] Insect eating eventually gaining ground in the Global North has been compared to sushi's rise in popularity in the North outside Japan. However, the two differ from each other to a significant extent, even if the initial yuck-factor or the exotic nature of these foods are common features. Sushi in the Western world has been an additional, by now normalised food choice without any

62 Indeed, Beyond Meat estimates that 70% of its customers eating Beyond Burgers are meat eaters (https://www.foodnavigator-usa.com/Article/2018/01/12/An-estimated-70-of-Beyond-Burger-fans-are-meat-eaters-not-vegans-vegetarians-says-Beyond-Meat).

63 Ana C. Day is the founder of 4Ento.com, an organisation promoting insects as primary future protein alternative for human consumption.

64 For example, EU food regulations changed from 2018 to accommodate insects as food. Further at the EU level, a research project called PROteINSECT (Proteinsect.eu) was EU-funded. Moreover, the Dutch government supported the 2012-2013 Edible Insects -project carried out by Wageningen University and the FAO (see Paul Vantomme interview at https://www.youtube.com/watch?v=TyIfq4Azhr4).

meaning of transformation attached to it, whereas insects are attached to the narrative of challenging the conventional animal-based meat-eating related practices, and potentially transforming the conventional meat system.[65]

Contrasting the above *solution narratives*, the narrative around eating traditional and minimally processed plant-based proteins, *pulses*[66] (various beans, and lentils, chickpeas and dry peas) — nutritionally rich (see e.g. Mudryj et al., 2014), beneficial from an agricultural point of view (e.g. FAO-FNS Forum, 2016), and inexpensive replacements for meat — has been attracting much less attention. Such discourses do exist among some mostly development-oriented researchers, some similarly directed international organisations (e.g. parts of the FAO), and perhaps some of the people who are actually eating pulses regularly, i.e. (part- or full-time) vegetarians and vegans. Eating pulses is already normalised for the latter group of people who have often been doing it for years, or even all their lives, either in the Global North, or in the South, out of choice or, more often, necessity. Generally, pulse consumption is however low, especially in the Global North.[67] An indication of the weak or

65 Considering the Global South and discourses on the new meats, the number of articles from the last few years seems to be fairly modest, and there have been usually few if any reader comments. Here are, however, examples of such articles: A couple of Mexican English-speaking newspaper articles (in Mexico News Daily and The News) about insects are very enthusiastic about Mexico's culinary history in the sense that insects have been part of the Mexican diet for centuries, and still are very much so (for example, https://mexiconewsdaily.com/news/insects-the-answer-to-global-food-shortage/). A Hong Kong article in South China Morning Post about insects is positive as well (https://www.scmp.com/lifestyle/health/article/1309183/lead-de-bugging-nutrition), as is their article about cultivated meat (https://www.scmp.com/comment/insight-opinion/article/1295106/why-stem-cell-hamburger-tastes-future), and their article on plant-based meat (https://www.scmp.com/lifestyle/food-drink/article/1995239/bleeding-plant-based-burger-coming-trendy-restaurant-new-york). An article from the Indian newspaper The Hindu is also relatively optimistic about cultivated meat (https://www.thehindu.com/todays-paper/tp-in-school/qa-on-the-science-of-growing-hamburger-in-the-lab/article4996660.ece). A South African article in the Mail & Guardian about insects is also fairly positive, although some personal disgust is expressed by the journalist (https://mg.co.za/article/2013-07-05-waiter-open-up-a-can-of-worms/). Finally, an Argentinian article in the Clarin newspaper is optimistic about plant-based meat (https://www.clarin.com/espectaculos/si/animal-salio-lastimado-hamburguesa_0_4100G2MEb.html).

66 In the FAO definition, pulses are also called grain legumes; they are plant species from the Fabaceae family, harvested annually and only for dry grain, so not for oil or as vegetables. Soy is not considered to be part of pulses in this definition.

67 FAOSTAT data shows that world per capita pulse consumption decreased between 1961 (start of FAO statistics) and the early 2000's, after which there has been a slight increase. However, in most countries there has been a decrease in per capita consumption, or the consumption has been rather marginal to begin with.

non-existing new narrative around pulses is the lack of media attention to pulses,[68] lack of research on pulse varieties until recently (see e.g. FAO-FNS Forum, 2016), or the fact that the 2016 UN International Year of Pulses passed mostly unnoticed in the Global North at least.[69] Pulses seem to create modest enthusiasm, they are mainly covered in the discourse as an obligatory mention of an existing option (see e.g. FAIRR, 2016), albeit with less potential for big profit margins, unless processed into further products, such as ingredients into plant-based meat products.

Additionally, pulses receive a good deal of criticism, sometimes accompanied by humour, of being difficult to digest, difficult to cook, or plain boring. In their article discussing the necessary large-scale meat reduction and replacement, Schösler et al. (2012) themselves present lentils as "cumbersome" and "out of fashion". This negative narrative about pulses may work as an excuse to not to have to see them as real alternatives, or to move away from meat. There seems to currently exist a narrative whereby people would cook vegetarian food more often, if only they knew how. Schösler et al. (2012:39) argue that "in particular, a lack of familiarity and skill hampered the preparation of real vegetarian meals" among the Dutch. This is noteworthy, seen in the context of the Global North where cooking, including exploring new recipes, is considered a common hobby, and there is an abundance of cookbooks, including those with only vegetarian recipes.[70]

However, there may indeed be a point about a need to update the *image* of pulses (Jallinoja et al., 2016; Schyver & Smith, 2005), when researchers involved with sustainable food themselves (such as Schösler et al., 2012) call pulses in effect "boring". There is current research going on, for example, on developing new more productive and resistant varieties of pulses, easier or quicker to prepare, and more integrated into current food systems (see e.g. Global Pulse Confederation, 2016 for a 10-year research plan). Much of the research is directed on solving food insecurities in the Global South. Section 2.3.4 will focus some more on pulses.

Independent of the low status of pulses, of late, a new rise of vegetarianism or veganism in public discourses in the Global North is visible. This rise is likely to originate partly from the (still low but) seemingly rising conscious awareness of

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68 For example, the two UK based newspapers the Guardian and the Daily Mail have hardly any articles regarding pulses, apart from some cooking recipes. However, both Guardian India and Daily Mail India do have several articles (usually without reader comments) from the last years, with pulses being culturally and nutritionally important in India.

69 For example, in the online Guardian, there have been almost no articles referring on the 2016 Year of Pulses.

70 A search in the online New York Public Library catalogue with the word "cookbook" produces a list with many more titles included in the collection in the last 20 years (331 titles for the period 1998-2017) than in the century that preceded (140 titles for the period 1898-1997). The proportion of entirely "vegetarian cookbooks" in these English language titles is over 10% for the last 20 years (38 titles). The trend in cookbooks in Europe has been similar.

issues around the global meat complex, and partly from the availability of more vegetarian or vegan products in Western supermarkets and restaurants, and recipes in cookbooks. However, meat consumption figures are still not reflecting such a trend. Looking at collections of surveys on the numbers of people identifying as vegetarians, or vegans, e.g. in Wikipedia[71] — a source of information many turn to — it would certainly seem that the numbers are up from the 1-5% of people in most countries that have seen themselves as (out-of-choice) vegetarians in the last decades, or the no more than 1% that have identified as vegans. Several surveys from the last couple of years quoted in Wikipedia indicate that around 10% or more of people identify as vegetarians or vegans in several countries. Although the data as such may not be reliable, there does seem to be a rise in numbers of vegetarians and vegans in these surveys.[72]

This rise in survey figures can be explained in several ways. Firstly, it may actually reflect more people not eating meat. Secondly, it could indicate that more people allow themselves to say publicly that they identify as vegetarians or vegans. Thirdly, it may be that people consider being vegetarian or vegan more morally correct now than before, and since survey often tend to capture the ideal person rather than the real person (e.g. Lalwani, 2009), the rise in numbers may be a reflection of this. Fourthly, it could be that the definition of vegetarian or vegans diets is becoming looser,[73] and so, a considerable number of those identifying as vegetarians might still eat meat (see e.g. Haddad & Tanzman, 2003). The concept of *flexitarianism*, or part-time vegetarianism, also plays a role here, discussed below and in Section 2.3. The last three alternatives could explain the "veggie trend paradox" of why meat consumption levels have not (yet) come down in the Global North despite the recent vegetarian or vegan trend at the level of discourses. The first option — actually increased numbers of people not eating meat — could be accurate, but not show up in statistics, if those identifying as meat eaters are correspondingly eat-

71 See https://en.wikipedia.org/wiki/Vegetarianism_by_country.

72 However, for the same country, and around the same time, different surveys may give fairly different results. See also Hartmann and Siegrist (2017) for criticism on surveys asking people about their meat-eating practices.

73 The survey definitions of vegetarianism or veganism may also have changed over time.

ing more meat,[74] or if the meat industry is able to channel more meat into other consumption.[75]

Further on discourses around vegetarianism or veganism, Rothgerber (2014:34) refers to Adams (2001) in arguing that "the mere presence of vegetarians reminds omnivores of their [own] behaviour, causing guilt, anger, and a host of other negative emotions". His empirical results support Adams' theory. These negative emotions can be seen expressed in the discourses of the last decades, for example in the references to a "veggie lobby" — particularly popular in online discussions[76] — that supposedly tries to influence governmental policy to reduce or ban meat eating. In reality, however, governments have been very reluctant to discuss or implement any actual meat-reduction related policies (e.g. Laestadius et al., 2014; Wellesley et al., 2015). Devaluing vegetarians or vegans has been part of this discourse as well, and as Rothgerber (2014) argues, it is another coping mechanism of meat eaters, aroused by the presence of vegetarians and vegans, and used to overcome the cognitive dissonance created from eating animals, while knowing what it means for the animals being eaten, or what some other impacts from this practice are. Loughnan et al. (2010) coined the term *meat paradox* to describe our love for meat (dead animals) and our love for (live) animals as pets, for example, and Loughnan et al. (2014) explore how different people use different coping mechanisms regarding meat paradox and the associated cognitive dissonance and strategic ignorance, topics discussed further in Chapter 3.

Next to the vegetarian and vegan related discourses, there is a new discourse whereby a more relaxed attitude is applied, as regards radical change in eating animals. Here belong the discourses around flexitarianism, a new name for an older idea of a low contribution of animal-based meat in the diet.[77,78] While the end re-

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74 There is also a new trend, seen by some as a backlash against veganism, the "carnivore diet", whereby a person's diet is mostly based on animal foods. Such a person ends up consuming considerably more meat than an average meat eater. See https://www.theguardian.com/lifeandstyle/2018/may/11/the-carnivore-diet-all-meat-health-benefits-dangers from the Guardian on 11 May 2018.

75 For example, the meat consumption by domestic cats and dogs is significant (about a quarter of total meat consumed in the US is eaten by cats and dogs), and does also include meat that could be eaten by humans (see Okin, 2017).

76 See, for example, reader comments to the Daily Mail article https://www.dailymail.co.uk/health/article-2113986/Red-meat-early-death-study-Eating-regularly-increases-risk-death-heart-disease.html published online 12 March 2012.

77 See e.g. https://www.theguardian.com/lifeandstyle/2017/jun/25/vegans-vegetarians-and-now-reducetarians published online 25 Jun 2017.

78 Globally speaking, flexitarianism has been, and still is, the most common and normal way of eating conventional, animal-based meat, even if it is not called by that name (e.g. Hicks et al., 2018). As regards Europe, Dagevos et al. (2012) found nearly 20% of the Dutch in 2011 to eat in a manner comparable to either strong flexitarianism or vegetarianism/veganism, and