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The emergence and evolution of master terms in the public debate about livestock farming: Semantic fields, communication strategies and policy practices

T.M. Stevens a,⇑, N. Aarts b, A. Dewulf c

a Strategic Communication, Wageningen University and Research Centre, Netherlands
b ISIS, Radboud University Nijmegen, Netherlands
c Public Administration and Policy, Wageningen University and Research Centre, Netherlands

1. Introduction

The short, fast, and networked interactions on social media influence communication dynamics and the formation of communities in the public space (Castells, 2015). In this new, more fluid public space, it has become critical to use keywords as framing devices to shape conversations and communities (Giaxoglou, 2018; Norton, 2010; Scott, 2018). The use of keywords, online and offline, can unite or divide communities: Politicians strategically employ hashtags, mostly on divisive issues (Hemphill, Culotta, & Heston, 2013), but hashtags can also serve as collective action frames, such as in the case of #Occupy and #JeSuisCharlie (Giaxoglou, 2018). Popular hashtag terms generally refer to a single event and their use in public debates is rather short-lived (Lehmann, Gonçalves, & Ramasco, 2012). However, in some cases single keywords continue to generate attention over longer periods of time. Research has indicated several factors that determine continuous online activity, such as replies (interactivity) and unique retweet sources (diversity) in the persistence of hashtags on Twitter (Lin, Margolin, Keegan, Baronchelli, & Lazer, 2013), but in general, contextual factors best explain the continuous online use of keywords (Oka, Hashimoto, & Ikegami, 2014) and hashtags (Lehmann et al., 2012). Hence, in order to understand how keywords become and remain popular, it is essential to consider how terms obtain and maintain a framing function in changing policy contexts and public conversations.

In the public debate about the Dutch livestock sector, two terms have dominated the past five years: megastal (mega-stable) and plofkip (booster-broiler). Megastal literally translates into...
mega-stable and has a negative connotation similar to factory farms. Plofkip means a chicken (kip) that cannot stand on its feet and is on the verge of exploding (plof) and is used as a rhetorical device to portray the fat and fast-growing chicken of the broiler industry. Despite the specific and subjective meanings of these terms, they are the two most frequently used keywords and hashtag terms in the online conversation about agro-food in the past five years (Appendix A). Both terms function as rhetorical devices to evoke a dominant frame that problematizes the ‘industrialisation’ of livestock farming (Stevens, Aarts, Termeer, & Dewulf, 2018). They are popular on social media and news media, but are also used in parliamentary debates, as illustrated in the following two quotations (original Dutch quotations can be found in Appendix B):

(1) “There is a promising majority that wants to get rid of booster-broilers and mega-stables. The prime minister has always stated that she has found industrial livestock farming troublesome. […] Perhaps this is the moment that we can agree factory farming must come to an end.” (Marianne Thieme – PvD.
Tweede Kamer Debat, Begroting Economische Zaken (XIII) 20, 11, 2014)

(2) “If we discuss agriculture or farmers in The Netherlands, it is always about ‘booster-broilers’ and ‘mega-stables’. This negative portrayal is unjust […] I have stated before that the VVD does not recognize ‘booster-broilers’. (Helma Lodders – VVD. Tweede Kamer Debat, Begroting Economische Zaken (XIII) 20, 8, 2014)

Although the terms have a common connotative use, the terms are used in distinct policy contexts and have different functions in the attribution of responsibilities in agro-food governance. Mega-stable is used for contesting public policies related to the development of factory farms as an issue of scale-increase, for which politicians and public administrators are held responsible. Booster-broiler is used to stress the issue of animal welfare, for which the companies that sell the meat are held responsible. The use of the two terms thus reflect two strategic pathways to contest intensive livestock farming (Stevens et al., 2018). In sum, both terms refer to significant objects in livestock farming and have strong connotations, but have different meanings and different functions in the attribution of responsibilities in agro-food governance. A comparative case study thus enables us to study the different semantic and pragmatic functions of keywords, as well as the different roles of actors in the public debate and in the context of agro-food governance. More generally, the aim of this comparison is to provide insights into how keywords become dominant framing devices.

2. Theoretical framework

To analyse the function of loaded keywords as framing devices in public debates we build on the literature on collective action frames (Benford & Snow, 2000) and on an emerging area of research that investigates the evolution of single signifiers such as keywords, hashtags and memes on online media (Lehmann et al., 2012; Lin et al., 2013; Norton, 2010; Spitzberg, 2014). This field of research provides insights into the dynamics that shape the evolution of signs, such as the role of competition between signs at multiple levels in discursive environments (Spitzberg, 2014). However, this approach tends to neglect the agency of actors and employs a partial perspective of the sign. In the theory of memetics for example, actors are mere ‘hosts’ of memes and memes signify beliefs (‘signifieds’) and are thus not considered to represent objects in the world. This is particularly problematic when it comes to framing contests of politicized objects, such as booster-broilers and mega-stables. In order to understand the function of keywords as framing devices we combine these two perspectives and apply a multi-level analysis of discourse, analysing the interrelation of actors and language, as well as the interrelational of explicit words and implicit scripts in framing practices.

The three-dimensional framework of textually oriented discourse (Fairclough, 2010; Fairclough & Wodak, 1997) is used for the research design of this study. This framework combines micro-, meso-, and macro-level analysis: (1) linguistic analysis of texts, such as metaphors or keywords as rhetorical devices, (2) analysis of discursive practices of social actors that (co-)create texts, (3) analysis of social practices, considering the wider discursive context, such as policy decisions and processes.

First, we explore the role of keywords in semantic fields (Cheng & Ho, 2017; Fillmore, 2006; Hintikka, 1994; Nerlich & Clarke, 2000). A semantic field is a set of words from the same grammatical and semantic category (e.g. nouns that denote a farm), but that functionally contrast on the dimensions of binary semantic oppositions (e.g. positive/negative or specific/generic) (Fabre & Mairal Usón, 2012; Hills & Stern, 2006; Hintikka, 1994) – for example, varkensflat (pig-flat) as a specific (not generic), negative (not positive) word for a large farm. An analysis of keyword frequencies in semantic fields and word co-occurrences (Hellsten & Nerlich, 2010; Leydesdorff & Wellers, 2011) in the context of events and policy practices provides insights into: what alternative terms were used, or could have been used, in various contexts; if there already was increased public and political attention to large farms and broiler chickens before mega-stable and booster-broiler became popular; if the rise of these terms co-occurred with the fall of other terms, and if so, whether this reflects a frame-shift. This inquiry is guided by RQ1: How did the various keywords in the semantic field rise and fall in media and policy, and how does this relate to the discursive context of events and practices (e.g. protests, campaigns and policies)?

Second, we explore the role of actors’ communication strategies. Collective action frames are continuously being constituted, contested, and/or replaced by actors and these processes shape the evolution of frames. Snow and Benford (2000) differentiate three processes that shape the development of action-frames: discursive, strategic and contested processes. Discursive processes are conceptualized by frame articulation (connecting and aligning events, issues and responsible actors with experiences) and frame amplification (punctuating particular issues, beliefs, or events). Strategic processes involve deliberative, utilitarian, and goal directed actions, such as campaigns or actions by movement organisations and are conceptualized by ‘frame-alignment processes’, which include frame bridging, frame amplification, frame extension, and frame transformation (for a complete overview, see (Snow, Rochford, Worden, & Benford, 1986). Contested processes refer to processes such as ‘counter framing’ and ‘the dialectic between frames and events’ (Benford & Snow, 2000, p. 625). Based on this tripartite
framework we explore: the role of activist organisations in the
design, definition and development of these terms as part of frame
articulation; the function of these terms in the movement(s)
against intensive livestock farming as part of frame-alignment pro-
cesses; and the contestation through counter terms and counter
frames. This inquiry is guided by RQ2: How did the discursive
(inter-)actions of actors on social media, in news media and policy
debates and documents influence the evolution of these keywords?

Third, we analyse the role of stakeholders’ policy practices. It is
not well understood whether and how collective action frames
impact the policies of stakeholders that are held responsible. More-
over, the responses of stakeholders can in turn affect the evolution
of keywords, but this reverse influence has received little attention.
As these keywords have different functions in the attribution of
responsibilities in agro-food governance, we comparatively anal-
yse the role of commercial and governmental stakeholders based
on public responses and policy debates and documents. In particu-
lar we analyse the role of these keywords in political practices
(parliamentary questions, motions), political events (elections),
policy or legislative definitions and policy decisions (by govern-
ments and businesses). This inquiry is guided by RQ3: How did
the evolution of keywords in the public debate affect stakeholders’
policy practices and how did this affect the course of the conversation?

In this study, we do not intend to answer each of these three
questions separately, but instead analyse the interplay of these
dimensions (keywords in semantic fields, communication strate-
gies, and policy practices) as part of a single process through which
keywords become dominant framing devices.

3. Methodology

We conducted an iterative three-staged research design. The
results of each phase informed the analysis in the next phase, as
shown in the grey text between the phases in Table 1. As shown
in the columns of Table 1, the study involved an increasingly
detailed analysis in terms of: the time-period under study and
level of analysis (years; months; minutes); the data under study
(multiple terms in news and policy; single term on Twitter; key
messages of key players); the method (frequency analysis; co-
word network analysis; interpretive framing analysis). First, we
identified key events and studied the rise and fall of the various
keywords in semantic fields by keyword frequencies in news
media and policy debates and documents. Second, we focused on
the period of increased use of the dominant keyword and studied
the evolution of meaning and the role of social actors therein
through a co-occurrence analysis of Twitter data (Hellsten &
Nerlich, 2010; Leydesdorff & Wellers, 2011). Third, we concen-
trated on key moments (shifts in the public debate or key events)
and key players’ messages and mentions in news media, social
media, and policy debates and documents. Process-tracing
(Bennett & Elman, 2006; Collier, 2011) was used to reconstruct
the sequence of events and draw plausible causal inferences
between events, discursive practices and policy decisions within
each case. Then, by comparing the interplay between keywords
in semantic fields, communication strategies, and policy practices
in these cases, we identified the generic dynamics through which
keywords become dominant framing devices.

Data collection: A Boolean search query was developed to collect
messages about broiler chickens and large scale farms (Appendix
C). News media messages were collected with LexisNexis: an
online archive for news sources. Policy debates and documents
were collected from two governmental databases: rijksoverheid.
nl/documenten and officielebekendmakingen.nl. Social media
data, which included public messages on Twitter, Facebook,
blogs and news media comments, were collected with Coosto, a
web-application for social media analysis. The dataset is accessible
in the Mendeley data repository (Stevens, 2019b) and an overview
of the main data characteristics is given in Table 2.

Methods and Tools: The text, date, source, and author of the col-
lected data were imported in WordStat 7 for automated text anal-
yses on the three levels: (1) keyword frequencies in different
sources (media and policy); (2) keyword co-occurrences and the
discursive (inter)actions of actors (i.e. authors) over time through
coop-occurrence analysis; (3) the use of keywords by specific actors
in specific contexts through keyword retrieval functions. Together
these methods enabled the analysis of frame dynamics on two
levels of text (explicit words and implicit structures of co-
occuring words), as well as an interpretive analysis of the use of
keywords to identify function in context.

Table 2
Overview of data; number of messages per channel in the period under study.

<table>
<thead>
<tr>
<th>Method</th>
<th>Time period</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>– keyword frequency</td>
<td>Period of attention to the topic: 1997–2017</td>
<td>News media messages, Policy debates and documents</td>
</tr>
<tr>
<td>– key events in the sector through interpretive analysis</td>
<td>mega-stable: 1997–2017</td>
<td></td>
</tr>
<tr>
<td>co-occurrence analysis</td>
<td>Period of increased use of keyword</td>
<td>Twitter data: text, author, date</td>
</tr>
<tr>
<td>Interpretative framing analysis and process tracing</td>
<td>Key moments level of analysis: per day /minute</td>
<td>Key players’ messages and mentions in: news, social media, policy debates and documents</td>
</tr>
</tbody>
</table>
For the co-occurrence analysis applied in phase two, the link strength between keywords was measured by co-occurrences of keywords in messages (i.e. ‘co-word analysis’), and the network structure was analysed iteratively through clustering methods and multidimensional scaling (for a detailed explanation of the co-word analysis see Hellsten, Dawson, & Leydesdorff, 2010; Leydesdorff & Hellsten, 2006). To infer relations with date and structure was analysed iteratively through clustering methods and heat maps (Stevens, 2019a).

The interpretative analysis of the key messages of specific actors in specific contexts in phase 3 is based on the wider discourse analytical approach, taking into account the socio-political relations between the actors that are interacting; in this case primarily activist organizations and the stakeholders being contested. More specifically, we analysed interactive meaning-making processes through which keywords become and remain dominant in discourse using the analytical framework of Snow and Benford (2000), looking at discursive, strategic and contested processes.

4. Results: Dynamics in the emergence and evolution of master terms

Keywords frequencies in media and policy documents are shown in Fig. 1. The relevant findings for keyword co-occurrences and discursive interactions are referred to in the text (including statistical measures if applicable). Key messages and key moments and interpretations of the function of keywords, are referred to in the text (including quotations if applicable). Based on keyword frequencies and the use of keywords in context we mapped how competing keywords were situated on to the two most relevant dimensions of the semantic field (semantic binary opposites): specificity and valence (Fig. 2).

Based on a comparison of the interplay between keywords in semantic fields, communication strategies, and policy practices of these two cases, we identify four dynamics through which keywords become dominant framing devices. These are not consecutive phases, but gradual, overlapping and sometimes mutually reinforcing processes that signify the emergence and evolution of master terms.

4.1. Using loaded and flexible keywords for frame articulation

The framing contest in both cases revolved around an object (an animal and a farm) – not an actor, issue or event. These concepts relate to familiar images in livestock farming that are widely applicable, but also entail semantic associations that can be linked to responsibilities of stakeholders in the sector. The farm is in the countryside as part of the Dutch landscape – a public space and national heritage – and part of discussions about landscape planning, pollution, public health and livestock diseases, which for local and national governments are held responsible. The chicken is inside the farm, outside the sight of the public, but promoted to consumers as meat by retailers. These concepts thus each have potential to generate specific framing contests about the governance of livestock farming.

General attention to large farms and broiler chickens increased (in social media, news media and policy documents and debates) with the rise of specific normative terms. In both cases the most frequently used term was a compound lexeme that specified the object and these compounds became more frequently used in the public debate about intensive livestock farming than the generic lexeme (not stable but mega-stable, not broiler chicken but booster-broiler). The attribute of scale (mega and boost) links the familiar images of farming (the farm and the chicken) to industrialisation and implies a moral evaluation (immoral or negative valence). The use of mega-stable highlights the large construction in which animals are kept (‘stable’), in contrast to the farmstead as a family business (boerderij in Dutch), to implicitly frame the influx of large buildings in rural areas as alien and industrial. The use of booster-broiler relates the image of the meat product that people buy, to the image of a fat and maltreated animal, stuffed and slaughtered for mass consumption. As both compounds include a contrast that triggers a moral judgement, it is not possible to be in favour of mega-stables and booster-broilers. We define these terms as loaded terms. Loaded language carries emotional valence, as it triggers a value judgment that can lead to an emotion (Walton, 2014).

In addition to the moral evaluation implied by these loaded terms, they trigger other constituents of the frame: the problem definition and causal attribution. Mega-stable implies a cause or issue (namely: scale increase), which was attributed to an increasing variety of problems in practice (animal diseases, public health, social inequality). Booster-broiler defines the issue (namely: animal welfare) and this problem was attributed to an increasing variety of actors in practice (supermarkets, restaurants and other retailers). In addition, both terms were used for making sense of a variety of (news) events, from farm fires to elections. These terms thus implicitly frame the subject to a great degree (through ‘high-inference language’), yet are open enough to be applied widely, such as for addressing multiple problems, for blaming various actors and for making sense of various events in livestock farming and food production. As the implied normative and semantic meanings were explicitly and consistently related to realities and responsibilities in the sector, the terms came to designate a frame: mentioning the term evoked a frame in which events, issues and responsible actors were woven together. This process of ascribing implied meaning to keywords to create a coherent frame can be seen as part of the process of frame articulation (Snow, 2004). As pointed out in the literature about frame articulation, highlighted elements of the frame may function much like synecdoches, symbolizing the larger frame or movement of which it is a part (Benford & Snow, 2000).

4.2. Frame alignment through amplification and bridging

Booster-broiler first appeared in the media in 2001 but became popular when it was employed as a campaigning term by Wakker Dier (an animal welfare organisation) in 2012. Before 2012 Wakker Dier campaigned with ‘cheap-meat’ (‘kiloknaller’). Cheap-meat was a term already used by supermarkets to promote meat, but Wakker Dier linked the notion of cheap-meat to poor animal welfare and presented a new definition: any meat with a price per kilo lower than cat feed (£4,12) – most of which is chicken meat. According to Wakker Dier, ‘animals pay the price’ and with the support of farmers in their campaign they blamed supermarkets for selling cheap meat. In 2012 Wakker Dier focussed their framing strategy with the booster-broiler campaign: concentrating on the broiler industry, portraying the animal behind the meat product and thereby stressing the issue of animal welfare. They defined booster-broiler as meat chicken without an animal welfare label and targeted companies that sold booster-broiler through a

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2 The Jaccard similarity coefficient (J) is used as a uniform measure for word co-occurrence in the result section.

3 We interpreted the relative specificity and valence of words in relation to the other words based on the use of keywords in context. This means that the exact coordinates of words on the map are not informative, but that the position of words in relation to the other words is.

4 Concepts implied (carried) by a keyword were reflected by terms that co-occur consistently, while concepts that are associated with (ascribed to) the keyword were reflected by temporary co-occurring terms.
there was an amplification of attention and subsequently a concentration of term-use: *mega-stable* became the dominant term. Milieudefensie, an environmental organisation, started a campaign to support and coordinate local protests against large farms. They opened a registration centre to map the rise of mega-stables in the Netherlands, which generated news attention. Citizen initiatives from various provinces and livestock sectors, joined forces through the more generic collective action frame *mega-stable*. In response to the public turmoil the national government commissioned a study to independently map the development of mega-stables. Hence, the term became widely used in news media and policy debates and evolved into a common denominator for all large farms. Most significantly, the most well-known ‘pig-flat’ in the Netherlands (Knorhof) that generated attention as *pig-flat* from 2004 to 2008, was labelled as ‘*mega-stable*’ in 2017 (110 news articles used ‘*mega-stable*’ and 11 used ‘*pig-flat*’) when it caught fire and burned down.

A case comparison of co-word dynamics reveals that in both cases similar loaded terms were used in similar ways. With the rise of *booster-broiler* and *mega-stable*, the use of the most frequently used alternative term decreased. These terms (*cheap-meat* and *pig-flat*) were used similarly as the keywords (in a similar context) but had a relatively low co-occurrence with the keywords (*J0.26* and *J0.41*) respectively in comparison to other alternative terms in the semantic field. *Booster-broiler* narrowed the conversation about cheap-meat production to the issue of animal welfare in the broiler industry, while *mega-stable* widened the conversation about pig farms to intensive naming and blaming campaign. Although Wakker Dier continued with their cheap-meat campaign, the term *cheap-meat* declined in 2012 and *booster-broiler* became the most popular term.

In the mega-stable case, various alternative terms circulated in news media and policy, starting in 1997 and peaking in 2007 before *mega-stable* took over. Some of these terms refer to a particular type of eco-industrial farm, such as *agro-park* and *new-mixed-company*. Other terms were used as negative labels, such as *cattle-factory* and *pig-flat*. The start of the use of these terms co-occurs with the swine fever epidemic in 1997–1998. In response to the swine fever, the national government organised a large project to reallocate pig farms: the Reconstruction Plan (‘Reconstructieplan’). Although this plan was intended to restrict the pig sector it became an instrument for land-use planning in rural areas in general. In addition to the reconstruction plan, the Ministry of Agriculture, Nature and Food Quality (LNV) commissioned research for prototypes of eco-industrial farms: large enterprises that combine agricultural activities based on industrial ecology, which resulted in four designs of *agro-parks*, such as Delta Park.

The introduction of each concept was related to a negative frame in news media (e.g. *pig-flat*) and every reallocation of a farm generated local protests. Attention was still fragmented: allocations and local protests were reported in regional news media which used different terms for large farms (such as *pig-flat*, *cattle-factory*, and *mega-company*). However, from 2007 to 2010 there was an amplification of attention and subsequently a concentration of term-use: *mega-stable* became the dominant term. Milieudefensie, an environmental organisation, started a campaign to support and coordinate local protests against large farms. They opened a registration centre to map the rise of mega-stables in the Netherlands, which generated news attention. Citizen initiatives from various provinces and livestock sectors, joined forces through the more generic collective action frame *mega-stable*. In response to the public turmoil the national government commissioned a study to independently map the development of mega-stables. Hence, the term became widely used in news media and policy debates and evolved into a common denominator for all large farms. Most significantly, the most well-known ‘pig-flat’ in the Netherlands (Knorhof) that generated attention as *pig-flat* from 2004 to 2008, was labelled as ‘*mega-stable*’ in 2017 (110 news articles used ‘*mega-stable*’ and 11 used ‘*pig-flat*’) when it caught fire and burned down.

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livestock farming and was linked to various problems and policies. The most important affordance of mega-stable was its applicability to various sectors and provinces: The co-word analysis shows a decrease of the frequency of the term ‘pig’ relative to other animals (goats, cows, chickens) between 2007 and 2009, and a stronger co-occurrence with provinces other than Brabant (the ‘pig province’). Booster-broiler was used in combination with visual images of maltreated chickens, reflecting the specification towards a more concrete, graphic and affective concept to amplify attention. Hence, the rise of the keyword and the decline of the most frequently used alternative term reflects a shift of attention, but in opposing directions on the dimension of generality (see Fig. 2).

A case comparison of the discursive (inter-)actions reveals that both keywords were not designed, but defined and popularized by activist organisations. Before the terms were employed by activist organisations (mega-stable in 2007 and booster-broiler in 2012),
they were used occasionally and with increasing frequency in public discourse (for about ten years) and in policy debates and documents (for about two years). Various people used the terms in various ways. Through the promotion of activist organisations, the use became more consistent, and the meaning more coherent: both terms became utilised as activist frames. Wakker Dier defined *booster-broiler* solely in terms of animal welfare: a meat chicken without an animal welfare label, and showed the animal behind the meat product sold by retailers. Their leading role was reflected on Twitter: Wakker Dier was the most active and most retweeted account (and the activity was highly correlated with the overall level of activity \( r(0.91) \), mainly due to being retweeted \( r(0.98) \)). Milieufedensie on the other hand, did not push any single term through a media campaign, but empowered citizen initiatives and facilitated a nation-wide movement whereby the more generic *mega-stable* emerged as the common activist frame. Accordingly, on Twitter there is no leader: Milieufedensie was not an active player, and the most active account – the citizen-initiative *MegastellenNee* – had a relatively low number of followers, replies and retweets. As the keywords became symbols of activist frames, only left-wing politicians in opposition used these terms and posted parliamentary questions, while the secretary of state and the ruling centre-and right wing parties consistently avoided the use of the terms. For example, left-wing politicians posted 13 parliamentary questions about *mega-stables* and *pig-flats*. In all responses, the secretary of state avoided the use of *mega-stables* and *pig-flats* and used ‘companies’ instead (18 times).

Together, the co-word dynamics and discursive interactions in each case reflect two types of frame alignment as part of the mobilization process: frame amplification and frame bridging (Snow et al., 1986). In the booster-broiler case, the focus on the animal behind the meat product and the use of the term as activist frame to blame retailers clarified and invigorated beliefs, values and emotions, as a reflection of amplification. In the mega-stable case, the national notification centre formed an organisational base that linked local protest groups with congruent frames (similar grievances and attributions), as a reflection of bridging. Although the cases show some overlap in actors (similar activists) and grievances and attributions), as a reflection of bridging. Although the cases show different patterns of interactions and there is no bridging trend (simultaneous or overlapping use of terms) between the movements.

### 4.3. From activist term to master term: counter terms and counter frames

In the year after the popularization by activists (*booster-broiler* in 2013, *mega-stable* in 2008) there is peak attention in news media and the political arena, primarily because of stakeholders’ responses. In the booster-broiler case, alternative keywords for *plofkip* (*booster-broiler*) emerged, such as *bofkip* (lucky-chicken), *Hollandse kip* (Dutch-chicken) and *flopkip* (failed-chicken). The Dutch poultry farmers’ trade union (NPV) directly opposed the notion of poor animal welfare and launched a counter campaign with the name *bofkip* (lucky-chicken), because of the high animal welfare standards in The Netherlands. However, *bofkip* was framed as a response to the booster-broiler campaign: only one newspaper article in 2013 that contained *bofkip* did not mention *plofkip*. Besides campaigns and counter frames, representatives of broiler farmers, processors, abattoirs, supermarkets and the Dutch Food Retail Association (CBL) collaboratively developed a transition plan to fully replace the ‘regular meat chicken’ with the *Chicken of Tomorrow* (a slow growing breed that would have more space and is environmentally sustainable). Despite the efforts to introduce this concept as a more sustainable alternative in contrast to ‘regular chicken’, Wakker Dier framed the chicken as a ‘booster-broiler in bullshit sauce’ as the chickens would not have an animal welfare label. Again, only one newspaper article in 2013 that contained the counter term (in this case *Chicken of Tomorrow*) did not mention *booster-broiler*. In 2014 supermarkets started to launch the intermediary chicken independently under their own brand name. In anticipation of this, Wakker Dier set up a campaign asking people to share a name for ‘the new booster-broiler of supermarket Albert Heijn’. Out of the many entries, *flopkip* (failed chicken) was elected as winner. *Flop* has exactly the same letters as *plof*, and points out that the new concept of Albert Heijn is old wine in new barrels: *flopkip* is *plofkip*. Hence, the frame was already set before Albert Heijn launched their new *Hollandse kip* (Dutch chicken) in page full advertisements: All newspaper articles that contained *Hollandse kip* also contained either *flopkip* or *plofkip*, and on Twitter *flopkip* was used more frequently than *Hollandse kip* (318 over 126 tweets). The co-word analysis shows that these terms had a high co-occurrence with *plofkip* \((J > 0.9)\) a rather short life-span (<1 year) and that they increased the number of messages about the issue. Hence, the terms did not establish alternative meanings but reinforced the existing frame set by *booster-broiler*. As *plofkip* came to dominate the semantic field of meat chickens, Wakker Dier redefined their other campaigning term *cheap-meat* from meat less than €4.12 per kilo (mostly chicken meat) to any meat without an animal welfare label (see dotted line in Fig. 2a). This redefinition not only raised the normative boundary (more meat was considered *cheap-meat*), but also enabled them to attack other sectors after their successes in the broiler sector.

In policy debates and documents we also find increased activity (Fig. 1b) and the introduction of counter terms and counter frames. Politicians from the governing centre- and right-wing parties started to use *booster-broiler*, but between quotation marks to signify the term as a rhetoric of others, rather than a reality. As stated by Helma Lodders (VVD) ‘a minor group led by activist organisations such as Wakker Dier is shaping the public debate with ‘booster-broilers’ and ‘mega-stables’ […] but the sector is ‘highly productive, efficient and sustainable’. The critique on *booster-broilers* and the new concept chicken of the private sector (*chicken of tomorrow*) instigated a fundamental debate about the sustainability of intensive livestock farming and the role of governmental, private and civil society organisations.

In the mega-stable case we found an opposite dynamic: the introduction of new positive concepts for large scale farms stopped, and the meaning or definition of *mega-stable* itself became contested. In an inventory rapport commissioned by the government (Gies, van Os, Hermans, & Olde Loohuis, 2007), the term *mega-stable* and *mega-company* were defined by the number of animals per stable/company for various livestock sectors. This operationalization turned the open signifier (i.e. a word without a commonly agreed upon definition) into a politically defined object for public administration and policy purposes. What was conceived as the ‘rhetoric of activists’ established into a real, commonly acknowledged problem. Milieufedensie continued to use their own definitions and surveys to announce that ‘the number of mega-stables more than doubled in five years’ and ‘the majority of people are against mega-stables’, creating a story about a real, swelling problem, that was taking place against the will of the people. This was used as a call to action and put the issue of *mega-stables* on the agenda of the provincial elections. The Party for Animals for example campaigned to keep municipalities ‘mega-stable free’. Surveys indicated that 64% of the Dutch population found *mega-stables* a ‘very important’ issue for the Provincial Elections (Omroep Brabant, 2011) and approximately 100,000 signatures were collected by the various local citizen initiatives to stop mega-stables (Trouw, 2011). The citizen-initiative *MegastellenNee* for example brought the issue on the agenda of the Provincial Council which led to a stop of mega-stables in March.
2010 – illustrating both the protest and political function of the mega-stable concept.

From April 2011, there is increased political activity and a shift in the Twitter conversation: The secretary of state started the project Dialogue Mega-stables in order to facilitate and coordinate ‘a moral public debate about scale-increase and the future of farming in The Netherlands’ (Bleker, 2011). The project consisted of a public survey, citizen panels, an internet dialogue and a stakeholders dialogue. Discussions were generally structured by theme (economy, public health, environment, animal welfare and landscape), which animal welfare advocates saw as a strategy to steer the public debate away from an industrialization-frame towards a sustainable intensification-frame: by focussing on themes, the intensification of livestock farming could also be framed as a solution, instead of as a problem. The dialogue project was criticised for a poor representation of more critical views and for not making enough use of social media. To overrule the outcome of the dialogue project, The Party for Animals started their own survey and presented their results a day before the presentation of the dialogue project: ‘the majority does not trust dialogue project’ and ‘the majority is against mega-stables’ (PvdD, 2011).

In sum, these cases show two different responses to the dominant term with similar effects on the public debate. First, stakeholders developed alternative concepts for the contested object in the form of real alternatives or new labels. These new concepts were related to the dominant keyword, failed to establish alternative meanings and instead fed the existing frame (indicated by a high co-occurrence with the dominant keyword, short life-span and increased number of messages on the topic). Second, stakeholders contested the definition or meaning of the dominant term: literally by definitions, or implicitly by creating or linking the term to new contexts. Both trajectories increased attention to the contested object, broadened the involvement of actors, and deepened the conversation to a fundamental debate about industrial farming in which discussants took a position and expressed underlying values. As the responses to the activist frame by stakeholders outside the movements generated a moral debate about industrial livestock farming in which various parties expressed their position in relation to this dominant frame, the terms can be considered to structure or ‘master’ the public debate beyond the movement.

4.4. Master terms shape policy practices

In both cases, attention in news media preceded attention in policy. Upon closer look however, political practices (parliamentary questions, motions), political events (elections), policy and legislative definitions and policy decisions (by governments and businesses) also influenced the public conversation (social and news media messages). The interplay of events, policy practices and communication strategies ultimately influenced policy decisions in both cases, but the pathways differed substantially.

Booster-broiler was framed as a specific issue with a specific solution (sell only meat with an animal welfare label). Moreover, there was little space for negotiating or refuting responsibilities. Wakker Dier dominated the debate, propelled media attention and triggered policy responses in the private sector. These policy responses (introduction of alternative chickens) were either reframed by Wakker Dier (causing negative publicity) or famed (after which assaults would stop). By alternating campaigns (addressing different retailers intermittently) and by altering definitions (raising the bar), Wakker Dier steered an incremental process towards better animal welfare standards. First, organisations with a symbolic role, such as a hospital and KLM airlines, stopped using booster-broilers, which helped to set the norm: booster-broiler is not OK. The sector soon started to collaborate and develop the chicken of tomorrow covenant, to collectively make a transition to a more sustainable chicken breed. Eventually, in January 2016, the three biggest supermarkets, which together sell half of the consumed chicken in The Netherlands, fully replaced the booster-broiler with their intermediary chicken. The sales of booster-broiler dropped from more than half of the total chicken consumption in 2012, to less than 10% in 2016. This must be interpreted however, in the context of global agro-food systems: about 70% of the Dutch chicken meat is exported to other countries, which means that still more than half of the chicken production in The Netherlands is regular broiler chicken (Agrimatie, 2018).

In contrast, mega-stable was related to multiple issues and events, and had no clear solution or alternative. In addition, multiple sectors and layers of public governance were involved and responsibilities were continuously contested. Policies shaped the context in which conversations about mega-farms flourished (e.g. the reallocation project in response to swine fever), but also affected the course of the conversation more directly. For example, the failure of the reallocation project in provinces put the issue on the national agenda and widened the debate (reflected by the project ‘dialogue mega-stable’). Hence, diffuse responsibilities, contestation and worsening situations, reinforced public attention and political activity.

Moreover, provincial elections (2007, 2011, 2015) correlated with increased public attention. Elections formed a window of opportunity for policy decisions, political changes and the influence of public opinion: on provincial and national level. In 2011, for example, the Provincial Council of Noord-Holland postponed the debate about requests for building mega-stables until after the elections, while the Provincial Council of Brabant loosened the ban on mega-stables just before the elections. In the national parliament, a motion for a temporal stop on mega-stables was approved in the Dutch lower chamber, but not enforced by the secretary of state, which triggered a confrontation on television. Hence, peak social media activity in 2011 was partly in anticipation of political events (provincial elections, political debates), but public attention also generated increased political activity.

Just as responsibilities and solutions were ambiguous, so too was the impact in the sector. In the first phase from 2007 till 2011, the local resistance to particular mega-stables was successful: none of the Agro Parks got implemented (Bakker et al., 2011) and just a few of the intended 250 reallocations were realized (DLG, 2010). In the second phase, from 2011 onwards, mega-stable was increasingly used to frame other policy issues related to scale-increase (such as land based growth, pasturing, milk quota and phosphate limits). Scale-increase however, did not stop: Overall, the total number of mega-stables gradually grew from 2005 to 2013 (Gies & Edo, 2015).

Both booster-broiler and mega-stable were politically contested and defined. Besides the connotative use of these terms to negatively frame intensive livestock farming in policy debates, the keywords were defined in more objective terms (a particular chicken breed and a farm of a particular size) for policy purposes. The dual function of these terms required continuous negotiation and frequently turned specific policy debates into a moral dispute about intensive livestock farming. The politicized objects stimulated the development of alternative objects or concepts (such as the intermediary chickens and new types of eco-industrial farms), which could function as boundary objects to generate communication between opposing groups (such as between the private sector and animal protection organisations about animal welfare labels) (Bos, Feindt, & Gremmen, 2015). However, movement organisations continued to curate the normative debate by redefining the master term to raise the normative standards (to include more types of farms/chickens). Since the concepts remain contested and are related to multiple problems and stakeholders, the ‘issues’ that these master terms bring on the agenda may never be solved definitely.
5. Discussion

As we have seen, dominant terms can occupy the semantic field and reduce the use of alternative terms for the object, but they can also trigger the introduction of alternative concepts. If alternative concepts are related to the dominant keyword, they fail to establish alternative meanings and instead feed the master term (indicated by a high co-occurrence, short life-span and increased overall attention). Lakoff (2004) has extensively written about the phenomenon that explicitly negating a frame can evoke the frame, and points at neurological associations for explanations. This study shows through associations in signification (word co-occurrences), that counter terms can trigger the master term and evoke the master frame that is associated with that term. In the field of memetics, this phenomenon can be explained in terms of competing memes (Coscia, 2013): within group competition (between terms) can strengthen the cluster or frame in its competition with other frames (between group competition). Besides the introduction of new concepts for the contested object in the form of real alternatives or new labels, stakeholders can contest the meaning of the term and the implied frame. Both counter terms and counter frames increase attention to the contested object, broaden the involvement of actors and trigger a debate in which underlying values and perspectives are expressed.

These dynamics designate the importance of a multi-level approach of discourse (Fairclough & Wodak, 1997; Spitzberg, 2014): a methodological approach at the level of keyword frequencies as well as clusters of word co-occurrences; and considering the semantic meaning of language as well the utilisation and creation of meaning in context. Such an approach can account for first-order or ‘denotative’ signification (altering definitions or objects), second-order or ‘connotative’ signification (ascribing implicit meanings) and third-order ‘ideological’ signification (signs as memes or myths). This study has demonstrated how these levels of signification are intertwined and become employed in meaning-making processes: a master term signifies a politicized object, implies evaluative meaning, and symbolizes an ideological frame.

Although the extensive multilevel analysis resulted in rich case descriptions, it did not provide conclusive evidence for causal relations. In fact, the methods combined in this study are based on different models of social reality (in particular in regards to agency and language). This means that the results presented in this study are based on the plausible causal inferences in two cases derived through process-tracing, and not grounded in a theoretical model. We thus encourage researchers to further disentangle and verify specific explanatory mechanisms.

In addition to such verifications, we encourage researchers to investigate the influence of social media on the use of dominant keywords in the public debate. In this study social media data were used as one of the sources to analyse the public debate, but our findings suggest social media played an important role in the emergence and evolution of master terms: besides the relative high frequency of master terms on social media channels, social media were actively employed for mobilizing activists and addressing and engaging opponents in the public debate.

6. Conclusion

In this longitudinal comparative case study, we analysed the emergence and evolution of two keywords in the public debate about livestock farming. More specifically, based on social media data, news articles, and policy debates and documents, we analysed the role of keywords in semantic fields, communication strategies, and policy practices. Process-tracing was used to infer plausible relations in each case, and through an interpretive case-comparison.

We identified four dynamics that help to understand how keywords become dominant framing devices: (1) loaded keywords for contested politicized objects can become powerful framing devices because they carry normative meaning, but are also open enough to be applied widely; (2) if activists explicitly and consistently relate the meaning of a loaded term to realities and responsibilities in the sector, the term becomes the signifier of an activist frame; (3) counter terms and counter frames increase attention, broaden the involvement of actors and deepen the conversation to a value-based debate, through which keywords can become master terms; (4) master terms shape policy practices, which in turn reinforces the affordance of the terms in the conversation. These are not consecutive phases, but gradual, overlapping and sometimes mutually reinforcing processes that help to understand how keywords become master terms. Master terms not just reflect, but also activate and establish a master frame around which conversations and practices revolve.

Appendix A. List of most frequent keywords and hashtag terms in online debate about Agro-Food

<table>
<thead>
<tr>
<th>Keywords</th>
<th>% of top 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 plofkip</td>
<td>16%</td>
</tr>
<tr>
<td>2 megastal</td>
<td>14%</td>
</tr>
<tr>
<td>3 industrie</td>
<td>10%</td>
</tr>
<tr>
<td>4 kippen</td>
<td>8%</td>
</tr>
<tr>
<td>5 voedselveiligheid</td>
<td>7%</td>
</tr>
<tr>
<td>6 vee</td>
<td>6%</td>
</tr>
<tr>
<td>7 supermarkten</td>
<td>6%</td>
</tr>
<tr>
<td>8 varkens</td>
<td>6%</td>
</tr>
<tr>
<td>9 boeren</td>
<td>6%</td>
</tr>
<tr>
<td>10 overbevissing</td>
<td>5%</td>
</tr>
<tr>
<td>11 producten</td>
<td>4%</td>
</tr>
<tr>
<td>12 bio</td>
<td>4%</td>
</tr>
<tr>
<td>13 milieu</td>
<td>3%</td>
</tr>
<tr>
<td>14 voedselverspilling</td>
<td>3%</td>
</tr>
<tr>
<td>15 gmo</td>
<td>2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hashtag terms</th>
<th>% of top 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 #plofkip</td>
<td>21%</td>
</tr>
<tr>
<td>2 #megastal</td>
<td>18%</td>
</tr>
<tr>
<td>3 #gmo</td>
<td>12%</td>
</tr>
<tr>
<td>4 #foodwaste</td>
<td>10%</td>
</tr>
<tr>
<td>5 #wakker dier</td>
<td>6%</td>
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<tr>
<td>6 #duurzaam</td>
<td>5%</td>
</tr>
<tr>
<td>7 #ttip</td>
<td>4%</td>
</tr>
<tr>
<td>8 #marchagainstmonsanto</td>
<td>4%</td>
</tr>
<tr>
<td>9 #gigastal</td>
<td>4%</td>
</tr>
<tr>
<td>10 #bijvangst</td>
<td>4%</td>
</tr>
<tr>
<td>11 #voedselfraude</td>
<td>4%</td>
</tr>
<tr>
<td>12 #fail</td>
<td>4%</td>
</tr>
<tr>
<td>13 #organic</td>
<td>2%</td>
</tr>
<tr>
<td>14 #dierenleed</td>
<td>1%</td>
</tr>
<tr>
<td>15 #megazat</td>
<td>1%</td>
</tr>
</tbody>
</table>
Search Query for Agro-Food:
(voedsel OR voedingsmiddelen OR levensmiddelen OR landbouw OR agri OR agro OR veevoedt OR vee OR zuivel OR melk OR vlees OR eier OR scharrelster OR legkip OR pluimvee OR kippen OR kip OR rund OR koe OR kalf OF varken OR biggen OR kippenvel OR ''beter leven" OR ''beter leven" OR ''zaanse kip" OR ''hollandse kip"

Search query mega-stable:
megastal OR varkensflat OR agropark OR agroparkveehouderij OR ''nieuw gemengd bedrijf" OR deltarpark OR ''pig city" (stal OR boerderij OR megabedrijf OR deltarpark + duurzaam OR schaal OR groot"

Search query booster-broiler:
(plofkippert, -Mister_Plofkip, -plofkip074, -iPlofkip, -recept, -vleeswijzer, -supermarktmonitor, -SjakiePlofkip, -plofkip_x, -ChippyDePlofkip, -plofkip69, -plofkip193, -PLOFKipje, -Plofkippet, -Mister_Plofkip, -plofkip074, -iPlofkip, - recept, -koken, -bereiden, -oven, -bakken, -braden, -gerecht

Search query for Agro-Food:
(voedsel OR voedingsmiddelen OR levensmiddelen OR landbouw OR agri OR agro OR veevoedt OR vee OR zuivel OR melk OR vlees OR eier OR scharrelster OR legkip OR pluimvee OR kippen OR kip OR rund OR koe OR kalf OF varken OR biggen OR kippenvel OR ''beter leven" OR ''beter leven" OR ''zaanse kip" OR ''hollandse kip"

Search query mega-stable:
megastal OR varkensflat OR agropark OR agroparkveehouderij OR ''nieuw gemengd bedrijf" OR deltarpark OR ''pig city" (stal OR boerderij OR megabedrijf OR deltarpark + duurzaam OR schaal OR groot"

Search query booster-broiler:
plofkippert, -Mister_Plofkip, -plofkip074, -iPlofkip, -recept, -vleeswijzer, -supermarktmonitor, -SjakiePlofkip, -plofkip_x, -ChippyDePlofkip, -plofkip69, -plofkip193, -PLOFKipje, -Plofkippet, -Mister_Plofkip, -plofkip074, -iPlofkip, - recept, -koken, -bereiden, -oven, -bakken, -braden, -gerecht

References