UNIVERSITEIT VAN AMSTERDAM

Framing the Crisis: The Interplay between PR, News Media and the Public

Master's Thesis

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Research Master in Communication Science

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Date of completion

29-01-2013

ABSTRACT

This study emphasizes the frame-building process of organizational-crisis situations in the interplay between the domains public relations (PR), news media and the public. This research contributes to the conceptualization of framing and to the field of PR and crisis research by introducing framing on a so-called 'communication level'. This approach defines a next-order process of domain-specific meaning provision and framing in the complex interaction of communications. To inquire communicative associations between PR, news media and the public in terms of alignment in crisis framing, a new analytical expansion of semantic-network analysis is developed to compare implicit framing among domains. By examining press releases, news articles and social-media manifestations of five Dutch crisis cases, the dynamic character of crisis framing emerged. In the interplay among their communications the domains PR, news media and the public move in relation to each other, resulting in a pattern of either the absence or presence of frame alignment. The study documents frame alignment among the domains in the second crisis phase, implying crisis-meaning coherence. This pattern of alignment is considered to be crisis specific as a necessity to collectively make sense of a complex crisis situation.

INTRODUCTION

Societies are frequently confronted with disruptive organizational-crisis situations which significantly affect society. Communication and framing by relevant domains – i.e. public relations (PR), news media and the public – plays a crucial role in the consequences and escalation of organizational crises (Cornelissen, Carroll & Elving, 2009; Schultz, Kleinnijenhuis, Oegema, Utz, & Van Atteveldt, 2012). It is essential for these domains to understand their role in crisis framing to avoid that communicative actions intensify the crisis. An illustrative case is the Shell Brent Spar crisis. Due to Shell's lack of communication regarding the disposal of an oil-storage buoy at sea, the media and the public framed Shell's plans as an environmental disaster. In face of public and media opposition, Shell abandoned its plans and pursued the on-shore disposal option whereas the initial option would cause less damage for the environment. With extended communication, Shell's reputation damage and the environmental damage could have been limited (Heath, 1998).

Especially in organizational-crisis situations, framing is essential due to the high consequences and possible escalating character of crises (Coombs, 2007). Small incremental and insignificant organizational changes can create disturbances in a system which, through their own increasing dynamics, can magnify in an uncontrollable way (Gregory, 2000). The rapid succession of emotional and stressful events with high media attention (Pattriotta, Gond & Schultz, 2011) makes it particularly hard to make sense of an often complex crisis situation and to decide how to act appropriate without intensifying the crisis (Weick, 1988).

Although numerous PR studies focused on crisis situations, this field is dominated by studies with low ecologically validity, traditional unidirectional effect, and case studies (Coombs, 2007; Kim & Cameron, 2011). Moreover, crisis research is mainly approached from an organization-centric perspective (Coombs, 2006). Hence, the perspectives of other significant domains (i.e. media and the public) have generally been overlooked. Some authors

discuss the role of the media, besides the PR, in crisis framing (e.g. Cornelissen et al., 2009).

Additionally, the public can be considered of vital importance in crisis framing due to their

social-media empowerment (Castells, 2005) and personal relevance to the crisis. Hence, the

key objective of this research is to fill the gap in the field of PR and crisis research by

analyzing communicative associations between the crisis framing in the domains PR, news

media and the public.

The well-established concept of framing, extrapolated from political (e.g. De Vreese,

2003; Vliegenthart, Schuck, Boomgaarden & De Vreese, 2008) and mass-communication

science (e.g. Scheufele & Tewksbury, 2007; McQuail, 2010), has not been frequently

analyzed in the field of corporate communication and PR so far, despite organizations'

continuous focus on their framing. Especially research regarding the interplay between the

communications of domains seems worthwhile in this context. This study introduces a more

complex approach to communication and framing compared to the traditional approaches,

following perspectives in studies of Science (Leydesdorff, 2001a). By defining framing on a

so-called 'communication level', a next-order process of domain-specific meaning provision

and framing in the complex interaction of communications is introduced. Additionally, the

current research tries to quantify this new theoretical approach by introducing a new

extension of semantic-network analysis. In terms of framing, the question raises how domain-

specific crisis framing evolves in the interplay between communications among the domains

PR, media and the public, possibly resulting in crisis-frame alignment, in terms of a more

common crisis meaning and framing. The overall research question reads as follow: *Does the

organizational-crisis framing of the domains PR, news media and the public align in the

interplay between the communications of these domains over time?*

To analyze framing on the communication level semantic-network analyses (Hellsten,

Dawson & Leydesdorff, 2010) are applied to identify implicit frames. This method is further

expanded for quantification by implementing statistical frame comparison. Organizational press release, media coverage and public social-media utterances of several organizational-crisis cases will be investigated. Besides its theoretical contribution by introducing a renewed and complex perspective to framing this study also attends to methodically enrich the field of PR and crisis research by utilizing an enhanced semantic-network analysis. By combining the theoretical perspective with a newly developed method it enables the researcher to quantify and empirically analyze the theoretical-abstract concept of framing on communication level.

THEORETICAL FRAMEWORK

Theoretical context of framing literature: the actor level

Issues can be viewed from different perspectives and are construed by communication as having implication for a variety of values or considerations (Chong & Druckman, 2007a). Especially media, political and mass-communication studies investigate the dynamic process of meaning construction through the key theoretical concept of framing (Borah, 2011). Despite the fractured framing paradigm, characterized by theoretical and empirical vagueness and inconstancy (Scheufele, 1999; De Vreese, 2005), Entman's (1993) classical definition is commonly applied. Framing is "select[ing] some aspects of perceived reality and mak[ing] them more salient in the communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described" (Entman, 1993, p. 52). In short, a frame refers to an emphasis in salience of different aspects of a topic (De Vreese, 2005); how an issue is presented, rather than merely the salience of a specific issue – as in agenda-setting.

Communication can increase information salience – i.e. making a part of information more noticeable, meaningful, or memorable –, and hence memory storage, by placement or repetition (Fiske & Taylor, 1991; Chong & Druckman, 2007a). If these considerations are

available and accessible they may form the basis of individuals' opinions, beliefs or behavior without conscious deliberation (Higgins, 1996).

The relationship between media frames and public opinion has gained momentum in the field of communication science. In general, empirical studies show the direct effect of (mass) media frames on how individuals frame an issue. Frame development is characterized by a dynamic process (Scheufele, 1999) of frame building (i.e. how frames emerge), frame-setting (i.e. the correlation between media and audience framing), framing effects (De Vreese, 2005), and continuous actor interaction (Gans, 1979; Snow & Benford, 1992; Schoemaker & Reese, 1996; Carragee & Roefs, 2004; De Vreese, 2005). Through co-construction, frames are continually (re)created to interpret reality as being subjective (McQuail, 2010). Since issues can be expected to have different interpretations, frame building often results in a competition of conflicting frames (Chong & Druchman, 2007b). In this context framing reflects a play of power and boundaries of discourse over an issue; actors compete over reality framing. The above discussed theory and empirical findings reflect the dominant actor-level approach to framing theory.

Framing in organizational-crisis situations

The frame-building processes in organizational-crisis situations can be regarded as fundamental for the formation of an organizational reputation and for crisis escalation. Because organizational crises are characterized by low probability of occurrence, high organizational and individual consequences and unpredictability (Weick, 1988; Pearson & Clair, 1998; Dutta & Pullig, 2011), these events play a significant role in organizational reputation and performance (Dowling, 2002; Coombs, 2007; Pattriotta, Gond & Schultz, 2011). On frame-recipient level, an incomplete framing of the emotionally charged and stressful crisis situation may be related to (unnecessary) confusion or even panic among the

public (Lui & Kim, 2011; Van der Meer & Verhoeven, in press). Additionally, the heightened organizational visibility, as a result of the advent of social media, enlarges the possibility that crisis threats become manifest and escalate into a crisis (Coombs & Holladay, 2012). According to system theory, small incremental and insignificant organizational changes create disturbances in a system which, through their own increasing dynamics, can magnify in an uncontrollable way – e.g. global financial crisis (Gregory, 2000). Additionally, Weick's (1988) notion of enacted sensemaking states that crises may have small volitional beginnings in human action. Small and unexpected events, cumulated with others, construct a crisis situation, complicating sensemaking processes of complex crisis situations and deciding how to act appropriately without intensifying the crisis (Hermann, 1963; Pearson & Mitroff, 1993). Chaos theory, as a radical extension of sensemaking theory, suggests that meanings created through framing easily bias action into a particular direction (Thomas, Clark & Gioia, 1993). When a situation is perceived as a threat or crisis the number of alternative interpretations is automatically reduced (Staw, Sandelands & Dutton, 1981).

PR, news media and the public

In PR research, stakeholder theory addresses numerous domains of vital importance to an organization's wellbeing (Fassin, 2008). However, the explorative characteristic of crisis-framing research demands a restriction to the most fundamental domains: (1) organizational PR, (2) news media, and (3) the public.

Naturally, PR professionals of the organization undergoing a crisis are considered a significant domain. Their profession determines their key tasks as crisis communication and frame building. In this regard, numerous studies focused on public reactions to organizational-crisis response strategies (e.g. Benoit, 1997; Coombs & Holladay, 2002; 2008; Coombs, 2006; 2007; Claeys, Cauberghe & Vyncke, 2010).

In framing literature media are considered crucial for frame-building processes. Not only are the media able to influence the public frames, but they can also make or break a company's reputation (Dutton & Dukerich, 1991). Because of organization's extensive relations with diverse publics, media, as a platform, are crucial for crisis communication (Neijens & Smit, 2006; Cornelissen et al., 2009).

The public-framing power is often regarded as limited due to unequal distributed resources in a competitive environment (Pan & Kosicki, 2001). However, the Internet has empowered the public with a platform to engage in mass-to-mass communication (Castells, 2007), thereby considerably leveling the playing field. The "nobodies" of the past have become the new "somebodies", demanding attention and engagement online (Booth & Matic, 2011) and collaborate in framing situations, especially in crisis situations as a means of quick communication (Grunig, 2009; Wigley & Fontenot, 2011). Additionally, journalists are increasingly using social-media manifestations as sources for news generation (Lariscy, Avery, Sweetser & Howes, 2009; Waters, Tindall & Morton, 2010). Along the line of Castells' (2007) mass self-communication theory, citizen journalism reflects the public empowerment (Goode, 2009). The public is not constrained by costs, time and editorial processes, compared to journalists (Lowrey, 2006; Sweester & Metzgar, 2007), allowing for faster, more frequent and extended mass distribution of (new) content (Lowrey, 2006). In case of an organizational crisis it is highly plausible that members of the public relate to this crisis in terms of e.g. (in)direct victimization and active participation on social media to obtain and share information (Liu, Austin & Jin, 2011). Additionally, Liu et al. (2011) indicate the importance of the public as social-media creators and (passive) followers in producing and consuming crisis information. The discussed importance of the three domains leads to the following research question. **RQ1**. *To what extent do the domains PR, news media and the public emphasize an organizational-crisis situation in their communication?*

Framing approach in systems/domains: the communication level

The current framing literature and paradigm approach the dynamic process of framing and framing effects predominantly on the actor level. The analytical actor level reflects a perspective of public discourses in terms of relying primarily on sending-receiving communication and unidirectional effects of message content and framing of attributions on individuals/actors (Goffman, 1974). In the field of PR and crisis research framing is only partly applied, primarily on actor level, like utilization of individual frames (An & Gower, 2009) and framing effects (Hallahan, 1999). Thus, this research field seems to be stuck in a traditional epistemology (Heide, 2009). Rather than applying a corresponding perspective of individual and organizational discourses and frames, framing can also be approached as a set of discourses that interact in complex ways within and among domains. This approach specifies a next-order process of non-hierarchical meaning provision and frame building that takes place on the level of communications in the specific domains of PR, news media and the public and in the interplay among these domains. This newly introduced theoretical and analytical perspective to communication and framing can be labeled: 'the communication level'. In this regard, the complex interaction among communications, as components, in the domains is considered an autonomous and self-contained system that is free from people (supra-individual). Along the line of social-system theory and intra-systemic constructivism, the theory of autopoiesis (self-creation) is applicable (Luhmann, 1986). The interaction of communications in the domains PR, news media and the public is organized as a network of transformation and destruction of components. The individual communication of actors, through interaction, continuously generates and realizes a network of processes that produced them, and constitute it in a self-containing way (Maturana & Varela, 1980). In other words, communication is used in a social system as a specific mode of autopoietic reproduction (Luhmann, 1986); the complex interaction of communications takes on its own 'life' in

closed, self-referential communication circuits – social systems – and is mainly concerned with its own continuation (Leydesdorff, 2001a; Holmström, 2009). In this sense, communication gets its own dynamic. Communications are the elements which are produced and reproduced recursively by a network of communication. Hence, the success of communication is determined by how the social system interprets specific communication and whether it is adopted and co-reproduced rather than by inherent power of consciousness or the quality of the information. Therefore, a social system exists of a selection of ordered relations between latent elements – i.e. communications (Laermans, 1999). These communications cannot exist independently outside of these networks. In this regard, a distinction is made between social and psychological (actors) systems (Luhmann, 2002). Communication is only possible in social systems, psychological systems only play a role in the social system when they are communicated. Therefore, individual actors are ineffable; subjectivity remains inaccessible and intersubjectivity does not exist due to the selective interpretation of selective communication (Luhmann, 1984; Holmström, 1997). Only the communications, not the individual actors or their brains and thoughts, communicate and develop new communications (Laermans, 1999). In sum, the complex interaction of communications in the domains PR, news media and the public gives rise to domain-specific autonomous social systems, in which actors play a limited role.

This communication level, contradictory to the actor level, is not merely concerned with the direct effects on manifest frames but studies frames in the sense of a higher-order analysis of semantic networks. This theoretical and analytical approach emphasizes the changing distributions of words, their co-occurrence and the variance in meanings and relations (Leydesdorff & Hellsten, 2006). This analytical distinction will be further introduced and elaborated below by means of discussing explicit and implicit frames. Explicit frames relate to the actor level and implicit frames to the communication level perspective.

Frames are build trough specific use of language and thus through the use of certain words (Leydesdorff & Hellsten, 2006). The meanings of the words, that form the basis of a frame, are found in the word network they are part of. In this context, a distinction is made between sets of words (vocabularies) and repertoires or underlying contexts which provide meanings to the words (Hellsten et al., 2010). This approach builds upon the analytical distinction where a frame can either be explicit or implicit. In explicit framing a certain perspective to an issue is directly observable by focusing on the word choices (Hellsten et al, 2010). Hence, explicit frames are traceable with traditional content analysis, where texts are coded to pre-defined categories (Krippendorff, 1980). However, the majority of frames are not explicit (Hellsten, 2002). Implicit frames, as opposed to explicit frames, are not manifest but are embedded in latent dimensions of communication (Hellsten et al, 2010). In other words, patterns of words that are not directly observable co-occur throughout text and discourse. In this sense Luhmann speaks of an objective and supra-individual level (Luhmann, 2002). These frames are generated in spurious correlations between word (co-)occurrences in communications, where meanings are created in semantic contexts. Word co-occurrence arises at several levels. They may occur in one text or between different texts or periods. This dynamic process of co-evolving words regarding the same issue, at all levels, reveals the systematic information on latent aspects in communications. The coherence of words cannot be studied with traditional content analysis. Instead, the analysis of semantic maps should be emphasized which indicates different frames within a discourse (Hellsten et al, 2010).

The analytical approach to frames as implicit carriers of specific meanings enables to analytically highlight frame development over time. This type of analysis is able to quantify meaning and implicit frames in terms of measurable units of analysis (Leydesdorff & Hellsten, 2005). In this regard, information is transformed into meaning by the co-occurrence and co-absences of specific words in a (media) discourse. Codification defines this process of

meaning providing to information (Leydesdorff & Hellsten, 2006). The meaning codification may grasp the specific knowledge produced by the word network that is constructed. To investigate the attribution of meaning, the information restricted in the distribution of the units in text, words and their co-occurrences, needs to be analyzed. Thus, meaning can be operationalized as a semantic field that is characterized by word relations in a specific domain (Leydesdorff & Hellsten, 2005). This definition enables analyzing the organization and codification of communication in different contexts and at different moments in time. For this analysis a higher-order analysis is needed where co-occurring words are mapped, rather than a first-order analysis that is unable to indicate the contextualization of communication. The semantic maps indicate a higher-order discourse structure that can be compared over time in terms of degree of codification and shows the processing of meaning in communication (Leydesdorff, 2001b).

The current study focusses on analyzing implicit frames and their dynamics evolving among the communications of different domains – i.e. PR, news media and the public. By applying the communication level approach of implicit framing this study responds to the rising demand of a more complex analytical approach to the dynamic process of framing among several domains (Leydesdorff & Hellsten, 2005; Heide, 2009; Holmström, 2009; Schultz & Raupp, 2010) and is in line with the upcoming trend regarding semantic-network analyses of crisis framing (Schultz et al., 2012; Van der Meer & Verhoeven, in press).

Crisis framing and interplay between communications

A lack of research regarding the complex process of frame construction can especially be observed for crisis literature (Schultz et al., 2012). This section discusses the stages and dynamics of domain-specific autonomous systems of crisis framing on the communication level in the domains of PR, news media and the public and the interplay among the domains.

Domain-specific frame building in crisis situations

Due to the low-probability character of organizational-crisis situations, these situations defy

interpretations and impose demands on sensemaking (Weick, 1988; Schultz & Raupp, 2010).

Sensemaking is a central organizational construct that defines meaning provision (semantic

function) of organization-related events and issues that need to be made intelligible (Quinn &

Dutton, 2005; Weick, Sutcliffe & Obstfeld, 2005). In exceptional situations like

organizational crises, sensemaking activities rapidly emerge to provide an account in terms of

a discursive narration or framing. Thus, domain-specific constructed sensemaking account

provides the basis for the communicated crisis meaning and framing (Fiss & Hirsch, 2005;

Cornelissen et al., 2009). These frames can be seen as the product of the complex interaction

of communications, which serve as an autonomous communication system.

The principal is that specific domains differ in their initial production of discourses

and apply different codes of communication for providing meaning to words (Leydesdorff &

Hellsten, 2005). Complementary, frame-building practices, and the initial sensemaking

processes that precede it, are strongly guided by personal or professional identities and their

beliefs about the external issue. The sensemaking processes of PR professionals and

journalists are assumed to be based on their professional identities – i.e. the constellation of

attributes, beliefs, values, motives, and experiences (Cornelissen et al., 2009). In addition, the

public is considered to make sense of a crisis situation based on their personal identities and

interpretations of the crisis. Hence, the communications in the domains PR, media and the

public give rise to domain-specific social systems with their own self-employed crisis

meaning and framing as a necessary part of the operation of communication. In this regard,

codification processes of providing meaning to communication, related to framing, vary

across social domains in the initial meaning provision phase (Law & Lodge, 1984; Luhmann

1984; 1986). Thus, in the beginning of a crisis situation, prior to the interplay between

communications of the different domains, the domain-specific social systems are assumed to coexist apart and isolated from each other. At this part the systems are recursively closed, resulting in asymmetry in crisis framing and the utilization and meaning of spurious correlations between words (co-)occurrences. This relates to what Luhmann (2000) defines as 'differentiation'; the emergence of particular subsystems of society characterized as operational closure by special codes. In such a case, the systems distinguish themselves. Each social system may use the same information or codes, but they differ in terms of their criteria which underpin the selection of information and meaning provision to words (Leydesdorff & Hellsten, 2005); excluding the possibility of overlaps.

Due to the deviating (crisis) understanding, which is an essential aspect of the communication itself (Luhmann, 1986), the domain-specific social systems are unable to communicate with their environment and maneuver past one another. Communication can only be understood in the context of the specific system and never becomes self-transcending; it cannot adopt operations outside its own boundaries. This incommensurability makes it impossible for the domain-specific meaning and framing to align with others.

The theoretical approach of domain-specific frame-building processes offers a clarification of several related empirical results. First, corporate and economic/governmental domains differently made sense of the financial crisis in their narrations in the beginning of the crisis (Schultz & Raupp, 2010). Second, PR and news media were found to differ in associative framing and sematic networks in the initial phase of the BP oil spill crisis (Schultz et al., 2012). Finally, an analysis of a Dutch crisis showed no alignment in implicit framing by the public and the media in the initial crisis phase (Van der Meer & Verhoeven, in press). The focus of this study is on selection from variation, on how organizational-crisis situations are implicitly framed among the different domains in the initial phase. Hence, the first

hypothesis reads as follow: **H1**. *In the initial phase of an organizational-crisis situation the domain-specific implicit frames of PR, news media and the public are not aligned.*

Crisis framing in the interplay among the communications of the domains

After the individual sensemaking and crisis-framing processes, in terms of the rise of domain-specific social systems, the frames will meet on platforms provided by the media, resulting in interplay between communications among the domains PR, media and the public. Rather than emphasizing the role of actors, the question is how the meaning and framing of a crisis situation evolves in the interplay between communications of domains, in terms of the utilization of words (co-)occurrence repertoires in semantic networks. In a complex nexus of competing discourses or frames, there is a need to provide coherence to the issue (Hellsten et al., 2010). This necessity may not rule out the possibility of mutual borrowings among the domains. Especially in times of complex situations like organizational crises a need for meaning coherence might be crucial and ineluctable to collectively make sense of the confusing situation in combination with relevant actions (Weick, 1988) and to avoid a system of disturbance in terms of an uncontrollable crisis magnification (Gregory, 2000). Just like the clearly distinctive forms of mass-media communication[1] (Luhmann, 2000), the systems may converge to create conditions for further communication, i.e. in terms of being informational and cultural up-to-date (about the crisis situation and meaning).

With the crisis-specific necessity for meaning coherence the domain-specific social systems might move towards one another and even overlap, instead of remaining isolated. For example, Luhmann (2000), in his discussion of mass media, illustrates the clear mutual structural coupling between the media and political domain in terms of mutual responding, mentioning and commentary. Hence, the same communications have relevance in both contexts. This domain rapprochement does not imply total fusion of the systems, however a

(recursive) interlinking between the domains' meaning provision and framing might arise in the interplay between the communications of the domains PR, news media and the public. The domains' discourses might converge which encourages the reciprocal transfer of crisis meaning in terms of developing alignment in how the social systems interpret specific communication. In this regard, the congregation and interplay of domain-specific communicated frames may lead to an alignment in crisis meaning and framing among the domains. Practically, in the interplay between communications the domains PR, news media and the public may shift towards a common implicit frame and crisis understanding. In the course of time domains may apply common words (co-)occurrence patterns in their implicit framing, and hence meaning provision, of a crisis situation. This alignment is considered a self-organizing process which proceeds outside the awareness of the actors.

Empirical research indicates that corporate and economic domains do not differ in crisis narratives only in the beginning; they develop a common narrative during the time (Schultz & Raupp, 2010). Moreover, public and media implicit framing is found to align over time in a crisis situation (Van der Meer & Verhoeven, in press). The discussed approach and findings results in the following hypothesis: **H2:** *The implicit frames of the domains PR, news media and the public regarding an organizational-crisis situation will align over time.*

Renewal of domain-specific crisis framing
The interplay between communications of domains is considered to finalize in the alignment of the domain-specific frames to a common crisis framing. After meaning coherence, domains may, again, shift away from one another in terms of the adoption and reproduction of deviating elements in their social system. Since a social system does not limit itself by using constraints for the constitution of its elements (Luhmann, 1986) the domain-specific system may adopt new elementary units (communications) resulting in inconsistency in crisis

framing between the domains. Complementary, autopoietic systems presuppose a recurring need for renewal (Luhmann, 1986) and are by definition unstable and dynamic (Laermans, 1999), implying reframing of the crisis by the separate domains and absence of frame alignment in terms of social systems evading each other. Corresponding, deviation in public implicit framing regarding an organizational crisis was detected after extended news-media coverage (Van der Meer & Verhoeven, in press). Hence, the frame alignment may not be permanent in terms of domain-specific reframing of the crisis after a common meaning of the crisis is established in the interplay between the communications of the domains. Therefore, hypothesis three reads as follow: **H3**: *After implicit frame alignment, PR, news media and the public framing, regarding an organizational-crisis situation, will no longer align.*

Conscious social systems do not consist of a collection of all its past and present elementary units, nor does a social system accumulate all its communications (Luhmann, 1986). This mass of elements would become intolerably large and complex producing chaos in the system rather than a pattern of coordination. Therefore, social systems must renounce certain stability at the operative level of elements resulting in a continuing dissolution of the system as a necessary cause of its autopoietic reproduction (Luhmann, 1986). Hence, systems are inherently restless and element instability is conditional for autopoietic duration. This dissolution and instability demonstrates the dynamic character of social systems. The theoretical fundament for the first three hypotheses also implies a dynamic nature of the social systems in crisis situations. A crisis-specific pattern is assumed in which the coexisting social system, produced in the complex interaction of communications in the domains PR, media and the public, move in relation to each other as a result of their interplay, producing either frame alignment or not. This movement of the domains, as part of the hypothetical assumptions, is visualized in Figure 1.
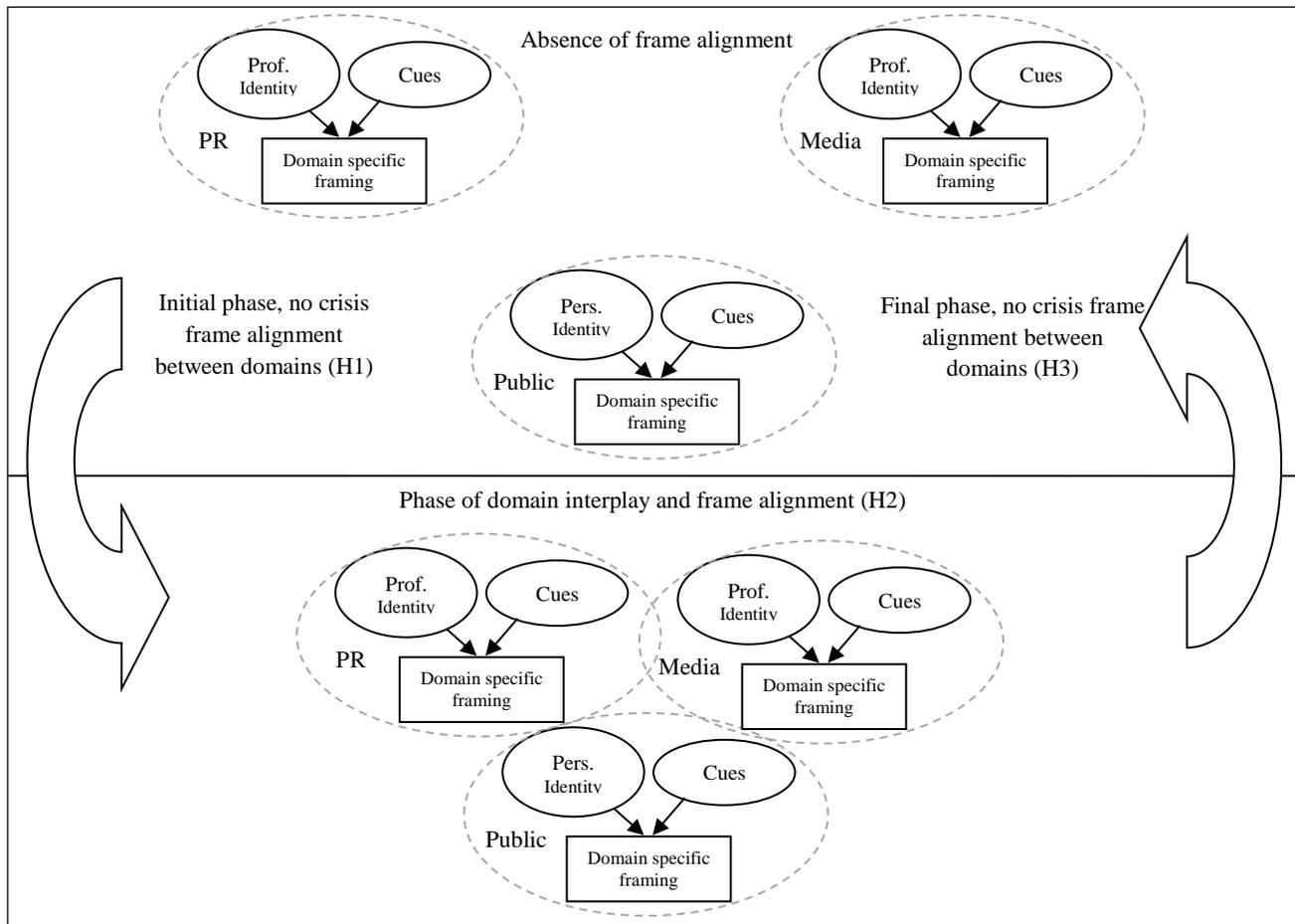
Figure 1. Crisis-specific dynamic of the systems PR, news media and the public in their interplay.

The rise of the reflective paradigm in crisis framing

The upcoming reflective paradigm (Holmström, 1997; 2010), referring to an enhancing

organizational interdependent societal context (Moreno, Verhoeven, Tench & Zerfass, 2010),

might relate to the frame alignment among domains. The reflective approach views an

organization from the outside or public perspective (Van Ruler & Vercic, 2005) and sees the

environment as something that needs to be respected instead of managed (Holmström, 2010).

Rather than trying in vain to control the flow of information, PR and news media are

encouraged to use the internet as a public-dialogue tool (Schultz, Utz & Göritz, 2011). With

the advent of the reflective paradigm PR professionals and journalist can be considered to

become more concerned with other involving domains (Holmström, 2010). This implies that

in their crisis framing the communication with other domains enlarges. With the increasing

frequency of communication between PR, news media and the public it is presumable that this advantages the frame alignment. Besides that the advent of social media facilitates the increasing communication between PR, news media and the public (Goolsby, 2010), it also requests for more communication in terms of publics' increasing demand for responsiveness by organizations and news media (Lui, 2010). Hence, with the advent of reflective management and social media it is argued that the magnitude of frame alignment by means of interplay between communications has progressed over the years, resulting in the following hypothesis: **H4**: *Over the years the extent of implicit-frame alignment, regarding organizational crises, between the domains PR, news media and the public has increased.*

METHOD

Data collection

By means of Dutch organizational-crisis cases the implicit framing on the communication level will be explored. This empirical investigation illustrates the theoretical framework through automated semantic-network analyses of crisis-related organizational press releases (PR), newspaper articles (news media), and social-media manifestations (public). The cases were systematically obtained by complying with five criteria; it should concern a (1) Dutch (2) organization-centered crisis, which (3) set in motion a significant chain of messages that are (4) practically accessible, and (5) it should concern one crisis in the past and one crisis each year starting from 2009 to grasp development over time.

First, to determine which Dutch crises obtained high (media) attention national newspapers were systematically explored. Second, each selected case was assessed based on the accessibility of data. For press releases the websites of relevant organizations were consulted. To obtain newspaper articles the academic online database LexisNexis was accessed using the name of the organization as search string while selecting all national

Dutch newspapers. Public manifestations were sourced from Twitter or the largest Dutch

forum 'Fok! Forum' (Big-Boards, 2011) using the name of the organization as search string.

Twitter data were preferred to cover the rapid public reactions and exceeding characteristics

of a crisis. Since only real time Twitter data is publically stored it was searched for via

external open-source websites and directly collected from the Twitter website for the real

time 2012 crisis. All texts were globally read to ascertain the articles' topic.

Research units

The selection procedure resulted in five crisis cases: (1) explosion SE fireworks, (2)

bankruptcy DSB bank, (3) limited KLM air travel, (4) explosion Chemie-Pack, and (5) Max

Havelaar fair-trade skepticism. Table 1 schematically shows the data and provides a crisis

description. Dutch law determines that in case of a high-level crisis situation, especially for

high-risk organizations, the external PR communication is automatically transferred from

organizational to governmental level (Wvr, 2010; LATRB, 2012). Therefore, in the cases of

SE Fireworks and Chemie-Pack, PR communication was performed by the local government.

Table 1. Selected Dutch organizational crisis cases.

Centered organization	Date	N press release	N newspaper	N Social media*	Description crisis
SE Fireworks	13/05/2000 – 20/05/2000	37	863	343 (F)	SE Fireworks, a fireworks depot located in the city Enschede, exploded, killing 23 people and injuring 947.
Dirk Scheringa Bank (DSB Bank)	01/10/2009 – 23/10/2009	24	1.345	6.021 (F)	The Dutch court declared the DSB bank bankrupt, resulting in 400.000 deceived customers and 1.400 fired employees.
Koninklijke Luchtvaart Maatschappij (KLM)	14/04/2010 – 23/04/2010	12	297	4.019 (F)	The eruptions of volcano Eyjafjallajökull in Iceland caused enormous disruption to KLM air travel due to the ash cloud.
Chemie-Pack	05/01/2011 – 08/01/2011	18	117	38.074 (T)**	Chemie-Pack, a chemical plant located in the city Moerdijk, exploded injuring 170 people.
Max Havelaar	10/11/2012 – 13/11/2012	19	54***	975 (T)****	Several media stated that Max Halvelaar's products are not fair-trade, resulting in public skepticism.

*F = data sourced from forum, T = data sourced from Twitter. ** The tweets were downloaded from the open source website www.twetrics.com. *** Local newspapers where included to obtain sufficient data. **** The tweets were downloaded directly from Twitter.com using scraper software since the crisis was real time.

The data were analyzed separately for several research periods to explore the development of implicit framing over time. To test the hypotheses three consecutive periods per case were identified based on crisis theory. The first period is defined as the day(s) when a domain communicated about the crisis for the first time, to grasp the initial crisis phase (H1). Hence the selected dates may deviate among domains. The second period covers several days after the initial phase of the crisis to comprehend the congregation of the domain-specific frames (H2). The final period represents the moment after the extended crisis coverage (H3). In Appendix A an overview of the cases and the periodization is presented.

Automated semantic-network analysis

Meaning construction of a crisis situation is given by words and by the relative position these words get in word networks and repertoires. Rather than explicit frames, implicit frames cannot be examined with traditional content analysis (Hellsten et al., 2010). To reveal crisis meaning, automated content analyses were applied to determine the latent crisis framing as word networks in the separate domains. This so-called automated semantic-network analysis maps a model of related words and distinguishes meaningful components in the communication spatially by applying an algorithmic and systems perspective. This method builds upon the similarity in occurrence patterns of words between the words measured by similarity measure coefficient (Hellsten et al., 2010). The word (co-)occurrences mapped in semantic fields of related words, specify the construction of crisis meaning and representing a higher-order structure of texts (Leydesdorff & Hellsten, 2006). Using co-word analysis, this technique maps the strength of associations between key words in texts which is used to compare implicit frames. This method has previously been successfully applied to analyses of discourse comparison on one topic (Leydesdorff & Hellsten, 2005), tracing the development of debates over time (Leydesdorff & Hellsten, 2006), codification of scientific texts (Lucio-

Arias & Leydesdorff, 2007), tracing emerging implicit media frames (Hellsten et al., 2010;

Jonkman & Verhoeven, 2011), and comparing media and public issue (Verhoeven, Jonkman

& Boumans, 2012) and crisis framing (Van der Meer & Verhoeven, in press). Following the

conceptualization of implicit framing as latent patterns of words that co-occur throughout text

the press releases, news articles and social-media manifestations are analyzed.

In practice, the automated semantic-network analysis is divided in several steps, based

on the scientific publication which contains a manual for the construction of sematic maps

using a set of computer supported programs (Vlieger & Leydesdorff, 2011)[2]. First, a list of

the 225[3] most frequently used words in the messages of each domain and each research

period are constructed, using the software program *FrequencyList.* Stopwords were

automatically filtered out with a standard stopwordlist. The remaining irrelevant words are

manually removed. Second, these words, together with the units of analysis, constitute the

input for the software programs *FullText* (press release, news articles, and forum messages)

and *Ti* (tweets), which generate word/document matrices for each domain and research period.

These matrices are based on the co-occurrences of words between sentences and paragraphs

in one text and between texts. Third, the matrices are imported into SPSS to conduct principal

component factor analyses with varimax rotation, with a maximum of twelve[4] components, to

identify statistical correlations between words within components. The components represent

the implicit frames of the analyzed texts. The component scoring the highest on the portion of

explained variance (R^2) and eigen value (*EV*) is generally considered the dominant frame, the

remaining frames represent sub-frames. Words with a variance of zero are not usable for

factor analyses and were therefore excluded.

In sum, semantic-network analysis inductively identifies implicit frames as word

clusters. Unlike traditional content analysis, the frames are induced from the data rather than

provided on the basis of an *a priori* scheme, reducing indexer effects (Leydesdorff &

Welbers, 2010). Normally, labels are interpretively and subjectively attached to the generated frames based on factor loadings and word clusters[5], to facilitate the communication of results. This personal interpretation of factor patterns comes with the danger of the fallacy of misplaced concreteness. In the final step of this analysis frames are generally visualized as semantic fields using Pajek software program (De Nooy, Mrvar & Batagelj, 2011); resulting in a two-dimensional word network where nodes represent words and lines the correlations between words. In this sense, framing among domains can only be interpretatively compared based on the personal labeling of the frames and the word-network visualizations. Moreover, when applying this visualization method in the current study it would result in a high number of complex figures, possibly resulting in an incomprehensible and cluttered presentation of the findings. Therefore, the present study seeks to develop and apply a new analytical approach for more statistical comparison of implicit framing among domains.

To offer a new instrument of implicit-frame comparison the application of factor analyses is further emphasized. Since by means of factor analyses latent constructs are inductively explored (Field, 2009) this approach is regarded applicable to grasp the latent character of implicit frames in terms of reducing complex (unsuspected) interrelationships, by inspecting the configuration, to measurable units of analysis. Factor analyses discern the regularity and order in phenomena that co-occur in space or in time and illuminating empirically different concepts. These phenomena are independent patterns (of variation) or clusters which are identified by factor analysis based on numerous of measurements or observations (Rummel, 1967). The notion of pattern of variation relates to the operationalization of implicit frames by Hellsten et al. (2010) as repertoires or underlying contexts. Factor analyses resulted in several components, the implicit frames, in combination with unique factor loading for the relevant variables, the words, per domain and per research period.

To compare the factor results among the domains the factor loading of the words on the frames are selected as units of analysis. Factor loadings are indicators of the substantive importance of a given variable to a given component (Field, 2009); it defines the degree and direction of the relationships of the variable/word with the pattern (Rummel, 1967). The words involved in an independent pattern are defined based on the factor loading. Since this loading measures the degree of involvement in implicit frames for separate words it can be stated that the factor loading defines the extent to which a specific word represents a component, indicating its importance in meaning provision and framing[6]. Therefore, the factor loadings of mutually used words by the separate domains are compared to enable statistical comparison of implicit framing. When the factor loading between separate domains of the same words highly correlate they are considered to use these words, which represent certain frames to a specific degree, in a comparable way and indicating frame alignment. Rather than focusing merely on the dominant frame, the factor loading of the words on all factors are included to obtain more nuanced data and avoid elimination of important words used in crisis framing. This newly developed analytical process results in a Spearman's Rho correlation, ρ,[7] between each two domains (pairs: PR-media, PR-public, and media-public) for each time period that can be compared between periods or domain pairs. By focusing on correlations, instead of on asymmetrical relations, the analysis emphasizes reciprocal and complex relation rather than unidirectional effect as in the actor level approach[8]. By means of factor-loading comparison the researcher avoids the interpretative component labeling and is able to compare implicit frames based on statistical indicators instead of based on subjective comparison of the factor labels and word networks.

For practical purposes a SPSS syntax is developed for this new analytical expansion of semantic-network analysis. To provide an overview of the practical application of this new perspective of frame comparison the syntax will now be further elaborated. The comparison

is done on domain-pair level per specific period – e.g. the public versus media in the first

research period of the KLM crisis. First, the rotated-varimax component matrices of the two

domains are exported from the SPSS output file to an Excel datasheet. Rotated matrices are

selected since they generate additional information in terms of defining more precise

boundaries of clusters and the central variables are more clearly identifiable (Rummel, 1976).

These matrices were generated in the process after the semantic-network analyses discussed

earlier. The rows represent the factor loadings of the 255 selected words on the found

components which are shown in the columns (Appendix B shows an example). Second,

opening these matrices in SPSS, the highest factor loading per word is selected as a new

variable since the matrix shows the factor loading of one word on all components. This new

variable will serve as indicator for comparison. Next, the two matrices are automatically

matched by used words, resulting in a dataset where the cases represent only the words that

are used by both domains[9] and a variable for each of the two domains representing the factor

loading related to the specific words (Appendix C shows an example). Finally, the domain-

specific factor-loading variables are tested on their correlation.

RESULTS

Crisis emphasis in communication by the domains PR, news media and the public

To inquire the crisis emphasis in communication the message frequencies are documented to

determine the domain prominence (see Appendix D). In total 52.218 messages were analyzed.

Noticeable is that especially the public communicate relatively intensive, with a mean

messages of 1977,28 per crisis, followed by the media, (M = 107,04). Noteworthy is the

moderate amount of communication by the crisis-related organization (M = 7,58).

The obtained results, as worked out via the enhanced semantic-network analysis, are

visually presented in Figures 2.1 till 2.6, documenting the Spearman's Rho correlation among

the domain pairs for each time period in each crisis case. The statistical indicators represent the correlation between the factor loadings of the two domains, reflecting the magnitude of frame alignment. The periodization is included in the results by distinguishing alignment among domains in the three periods. For hypotheses discussion the extent and the pattern of frame alignment is emphasized. Additionally, the data will be qualitatively enriched by illustrating mutual used words to provide insights of crisis-meaning construction.

Figure 2. Graphs of factor-loading correlations between domains for each case and the total
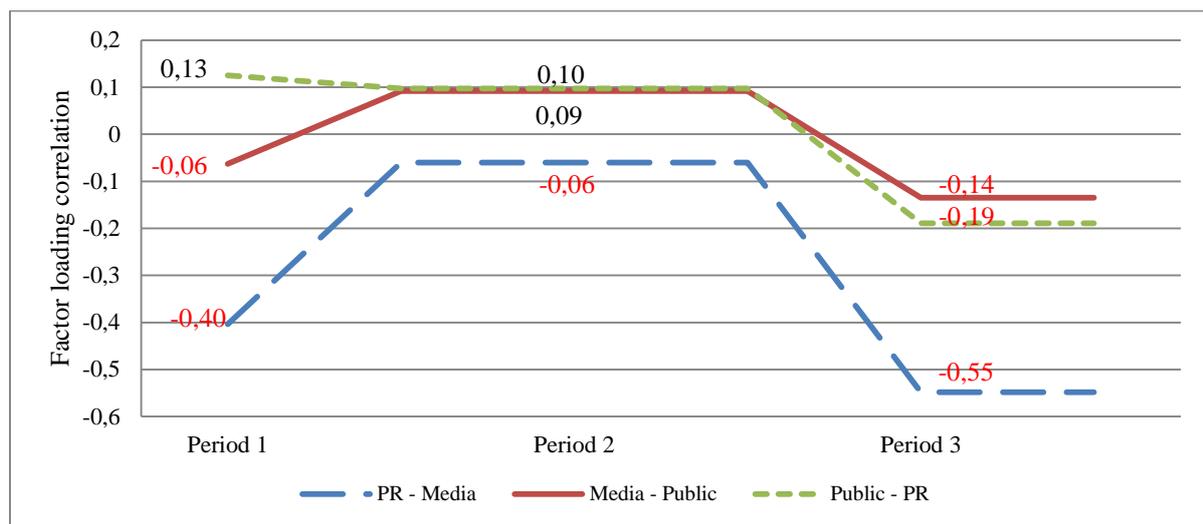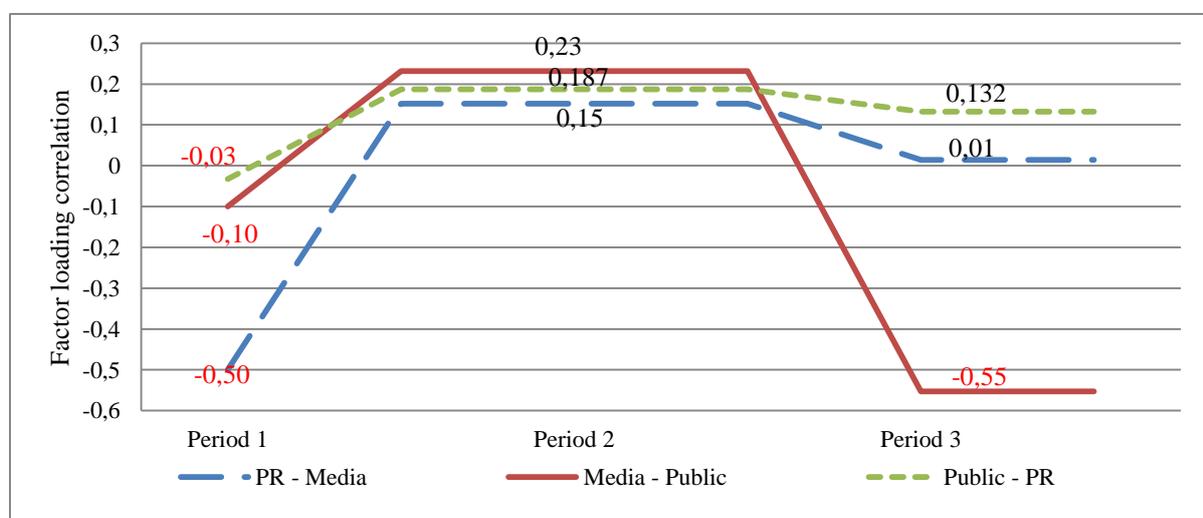

Figure 2.1 SE Fireworks crisis, 2000

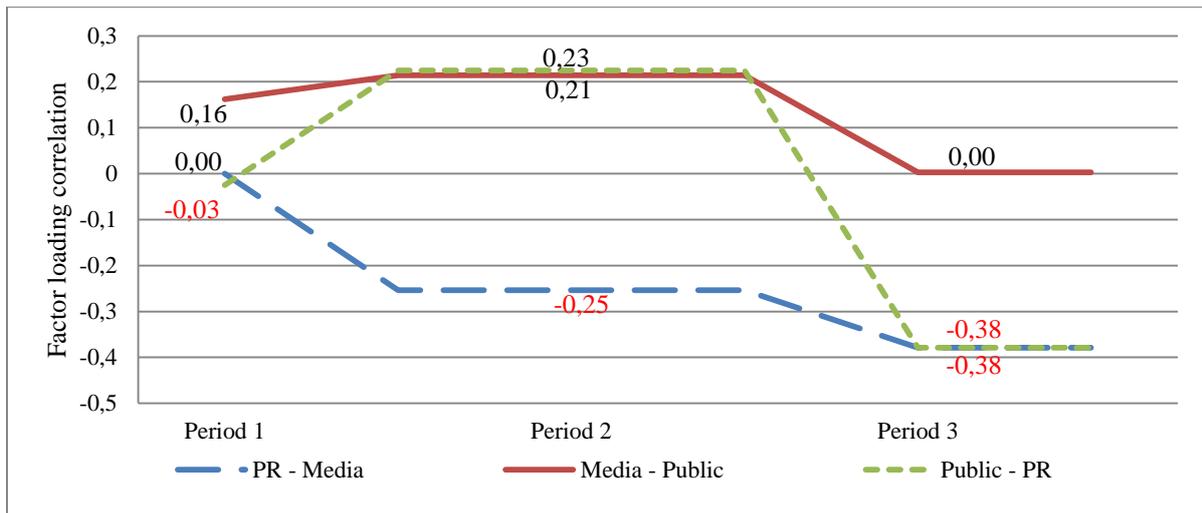**Figure 2.2** DSB Bank crisis, 2009

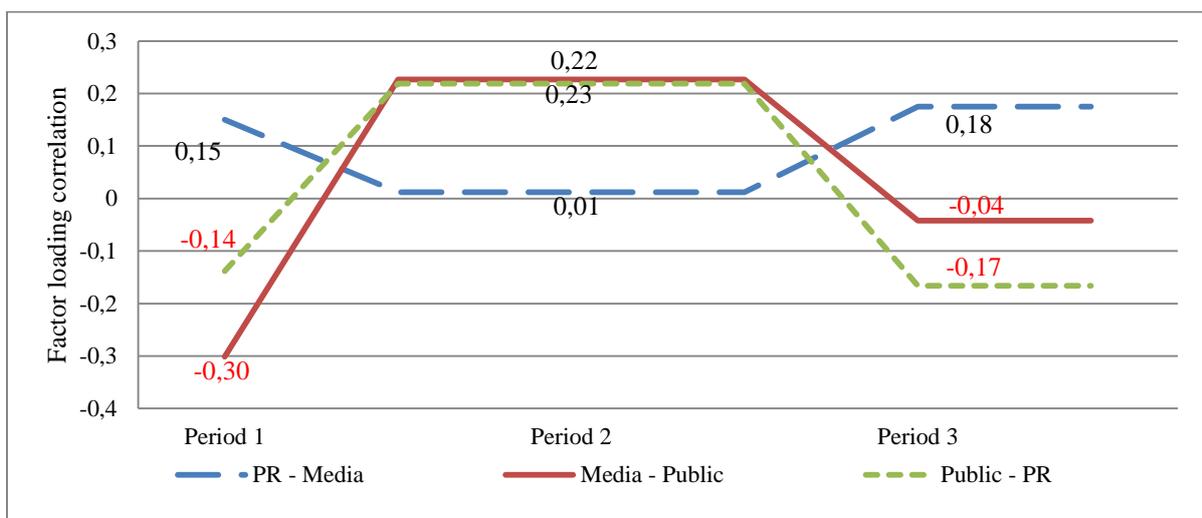**Figure** 2.3 KLM crisis, 2010

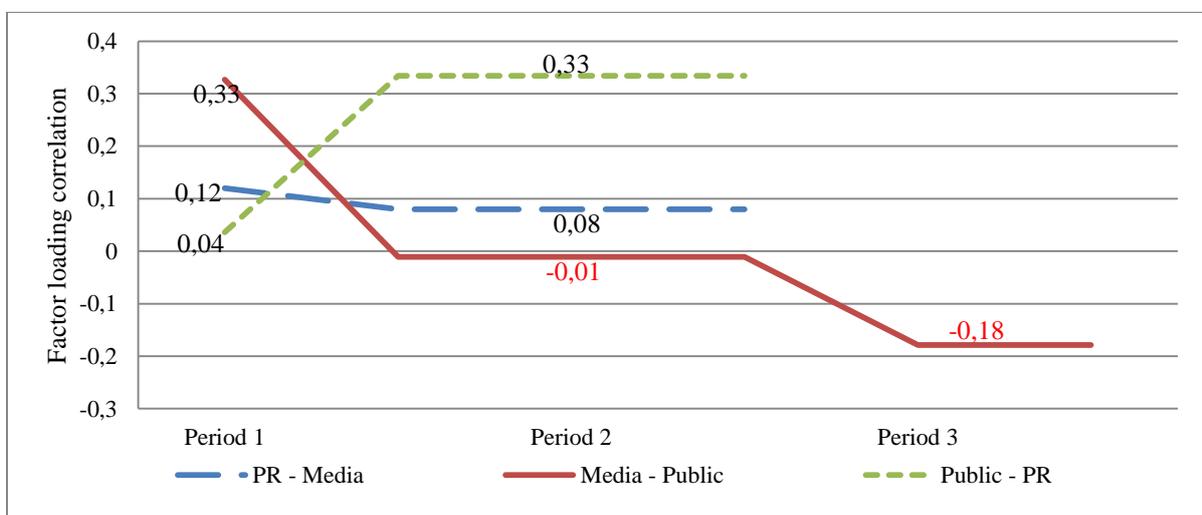**Figure 2.4** Chemie-Pack crisis, 2011

Figure 2.5 Max Havelaar crisis, 2012. Due to insufficient available PR data, correlations between public-PR and PR-media are absent in period 3.
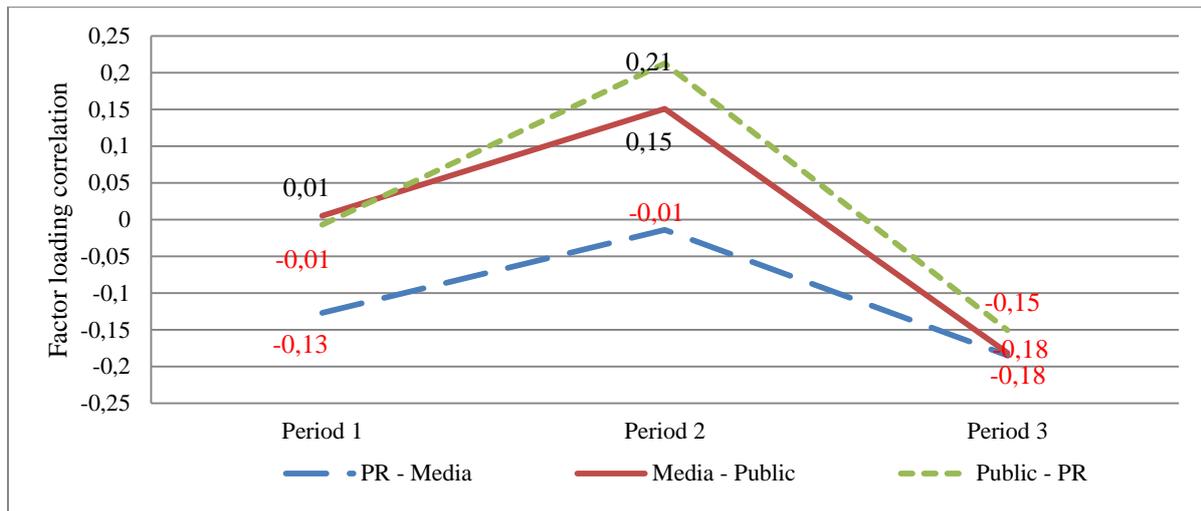
Figure 2.6 Total mean of all crises

Initial domain-specific crisis framing

To address hypothesis 1 the factor-loading correlations in the first period between the three

domains are compared to grasps the extent of implicit-frame alignment in the initial crisis

phase. Looking at the Figure 2.6, representing the mean correlations of all the crises, the

overall correlation is $((\rho\text{-}.13+\rho\text{-}.01+\rho 0.1)/3) = \rho\text{-}.04$. This negative correlation indicates

fundamental deviating word importance (demonstrated by the factor loading). Moreover, the

observable pattern in factor-loading correlations between the first and second period suggests

the absent of frame alignment in the first period. In hypothesis 2 this period comparison will

be further addressed. In the crisis-specific cases also a general course of low or negative

correlations can be observed in the first period; SE Fireworks $((\rho\text{-}.40+\rho\text{-}.06+\rho.13)/3) = \rho\text{-}.11$,

DSB Bank $((\rho\text{-}.50+\rho\text{-}.10+\rho\text{-}.03)/3) = \rho\text{-}.21$, KLM $((\rho.00+\rho.16+\rho\text{-}.03)/3) = \rho.05$, and Chemie-

Pack $((\rho.15+\rho\text{-}.30+\rho\text{-}.14)/3) = \rho\text{-}.10$. Conversely, the correlation regarding the Max Havelaar

crisis $((\rho.12+ \rho.33+\rho.04)/3) = \rho.16$ appears to imply certain frame alignment.

As Figure 2.6 documents, the correlation among the domains PR and media ($\rho\text{-}.13$) in

the initial phase is generally the lowest and the other two domain-pair correlations are

comparable ($\rho.01$; $\rho\text{-}.01$). This lowest PR-media correlation can also be observed for the

specific cases SE Fireworks (ρ-.40), DSB Bank (ρ-.50), KLM (ρ.00) and Max Havelaar (ρ.12). Contrary, for the Chemie-Pack crisis the media-public correlation (ρ-.30) was the lowest.

The low factor correlations among the domains indicate that the mutual-used words differ in their importance for meaning provision and framing of the crisis situation in the first period. Illustratively, in the SE Fireworks crisis the factor loading for the words 'person', 'asbestos', 'fireman', 'Twente' (crisis site), and 'victim' were for PR: .89; .87; .82; .22; .10, and for media: .30; .19; .40; .86; .52. Hence, the role of the first three words, were clearly prominent and determinative for the implicit framing in the PR domain and not in the media domain. On the other hand, the last two words were more focal for the media framing than for PR. Overall, hypothesis 1, predicting the absence of crisis-frame alignment in the initial phase among the domains PR, news media and the public, could therefore be confirmed.

Frame alignment over time

To analyze frame alignment over time (H2) the second period is emphasized. As Figure 2.6 documents, the overall factor-loading correlations in the second period are positive and relatively high. The mean correlation is ((ρ-.01+ρ.15+ρ.21)/3) = ρ.12, demonstrating comparable word importance among the domains, implying signs of crisis-frame alignment. A clear picture evolves by comparing the extent of frame alignment between the first and second period. A pattern of increment in alignment is visible (P1: ρ-.04; P2: ρ.12). Emphasizing domain-pair level, this pattern can be observed for all pairs; PR-media (P1: ρ-.13; P2: ρ-.01), media-public (P1: ρ.01; P2: ρ.15), and public-PR (P1: ρ-.01; P2: ρ.21). However, focusing on the correlation indicators, the results show a low correlation (ρ-.01) between PR and media, reflecting little frame alignment despite the increasing pattern over time. Also, the latter crises show a decreasing alignment for the PR-media pair: KLM (P1: ρ.00; P2: ρ-.25), Chemie-Pack (P1: ρ-15; P2: ρ.01), and Max Havelaar (P1: ρ.12; P2: ρ.08).

The general pattern of increasing factor-loading correlations among the domains demonstrates that the word importance, representing the frames, aligns over time. For example, in the DSB Bank crisis the factor loading for the words 'money', 'Scheringa', and 'people', were highly similar among media: .52; .60; .53, and the public: .54; .64; .53. Also, in the KLM crisis the factor loading of the public: .75; .63; .42, and PR: .71; .56; .58, for the words 'website', 'part' and 'flying' showed signs of frame alignment. These findings answer hypothesis 2, stating that implicit frames of PR, news media and the public regarding an organizational-crisis situation will align over time, affirmatively.

Renewal of framing

The absence of frame alignment in the last crisis period (H3) was tested by means of analyzing the third period. Figure 2.6 documents an overall negative factor-loading correlation among the domains in the third period; $((\rho\text{-}.19+\rho\text{-}.18+\rho\text{-}.15)/3) = \rho\text{-}.17$. This negative correlation, together with the decreasing pattern of frame alignment noticeable between the second $(\rho.12)$ and third $(\rho\text{-}.17)$ period, indicates fundamental contradictory in word importance, and hence in implicit framing. Additionally, when focusing on the domain-pair level, a strong pattern of decreasing correlations among all pairs evolves: PR-media (P2: $\rho\text{-}.01$; P3: $\rho\text{-}.18$), media-public (P2: $\rho.15$; P3: $\rho\text{-}.18$), and public-PR (P2: $\rho.21$; P3: $\rho\text{-}.15$). The pattern of decreasing frame alignment and relatively low factor correlations among the domains can also be observed for the specific crisis cases; SE Fireworks $((\rho\text{-}.55+\rho\text{-}.14+\rho\text{-}.19)/3) = \rho\text{-}.29$, DSB Bank $((\rho.01+\rho\text{-}.55+\rho.13)/3) = \rho\text{-}.14$, KLM $((\rho\text{-}.38+\rho.00+\rho\text{-}.38)/3) = \rho\text{-}.25$, Chemie-Pack $((\rho.18+\rho\text{-}.04+\rho\text{-}.17)/3) = \rho\text{-}.01$, and Max Havelaar $(\rho\text{-}.18)$. Moreover, the correlations in the third period, for all the crisis cases and domain pairs, are lower than in the second period, except for the pair PR-media in the Chemie-Pack crisis (P2: $\rho.01$; P3: $\rho.18$).

The findings show a decreasing alignment in the third period, denoting a phase of renewal where words and meaning have different functions for framing among domains. For example, in the Chemie-Pack crisis the factor loading for the words 'chemical', 'measurement', and 'environment', poorly correlated among PR: .98; .93; .74, and the public: .05; .10; .11. In the Max Havelaar crisis the factor loading of media: .92; .97; .99, and the public: .02; .42; .27, for the words 'African', 'cacao' and 'farmer' also showed substantial deviation in word importance. Hypothesis 3, stating that after crisis-frame alignment, PR, news media and the public framing will no longer align, could therefore be confirmed.

Reflective management

For testing hypothesis 4 the extent of alignment over time is compared among the crises based on the years of occurrence. The magnitude of frame alignment, expressed in factor-loading correlations, in the second periods of the crises is compared, taking in account the years of crisis occurrence. The first noticeable observation, in line with H1, is that the factor-loading correlation for the crisis in the past, 2000 $((\rho\text{-}.06+\rho.09+\rho.10)/3) = \rho.04$, is substantially lower compared to the more recent years; 2009 $((\rho.15+\rho.23+\rho.19)/3) = \rho.19$, 2010 $((\rho\text{-}.25+\rho.21+\rho.23)/3) = \rho.19$, 2011 $((\rho.01+\rho.23+\rho.22)/3) = \rho.15$, and 2012 $((\rho.08+\rho\text{-}.01+\rho.33)/3) = \rho.13$. However, no further increase between 2009 and 2012 is noticeable.

What is of special interest along the lines of reflective management is to compare the alignment of the public with PR and news media. Regarding the media-public alignment, an increasing trend in factor-loading correlations is observable over the years, with exception of the last crisis: 2000: $\rho.09$; 2009: $\rho.23$; 2010: $\rho.21$; 2011: $\rho.23$; 2012: $\rho\text{-}.01$. Especially, the fundamental increase in alignment between 2000 and 2009 implies a substantial rise of frame alignment between media and the public over the years. Moreover, from 2009 till 2011 the level of alignment stays rather consistent. Analyzing the PR-public alignment a clear

increasing picture evolves: 2000: ρ.10; 2009: ρ.19; 2010: ρ.23; 2011: ρ.22; 2012: ρ.33. Alignment among PR and news media can also be considered as a form of reflective management. From 2000 (ρ-.06) to 2009 (ρ.15) an increase is noticeable in the alignment. However, in 2010 a decline was found down to ρ-.25. Afterwards, in 2011 (ρ.01) and 2012 (ρ.08) an increasing alignment is noticeable. However, the level of alignment remains relatively low. Hence, hypothesis 4, stating that over the years the magnitude of crisis-frame alignment between PR, news media and the public has risen, is only partly confirmed.

CONCLUSION

The current study was conducted to inquire the organizational-crisis framing of the domains PR, news media and the public and the frame evolvement in the interplay between the communications of the domains. With the use of a new analytical extension of semantic-network analysis press releases, news articles and social-media manifestations, concerning five Dutch crisis cases, were analyzed. By introducing the theoretical and analytical concept of the communication level – in contrast to the actor level – this research is amongst the first studies, in the field of PR and crisis communication, adopting a complex approach to the dynamic process of framing among several domains using semantic-network analyses.

This study found that especially the public domain communicates intensively about the analyzed crises, in particular compared to PR. These findings specify the publics' prominence in crisis communication and framing, advocating for a more complex and non-hierarchical approach (Castells, 2007) to frame-building processes among the domains PR, media and the public.

This research demonstrates that in the initial phase of the crises the implicit framing among the domains PR, media and the public were not aligned. This result implies variance in the initial production of discourses and rise of domain-specific social systems which

coexist isolated from each other (differentiation) in this period (Luhmann, 2000; Leydesdorff & Hellsten, 2005). After the initial phase the frames meet, resulting in interplay between the communications among the domains. In this interplay the results show signs of alignment among the domain-specific crisis meaning and framing, denoting rapprochement of the systems. After the phase of alignment the frames became domain specific again in terms of no frame alignment. This absence might point towards the systems' shift away from one another and their recurring need for renewal (Luhmann, 1986). Finally, the results generally document a rise in the magnitude of frame alignment between the years 2000-2009. This may indicate an increase of a reflective perspective; organizations may increasingly focus on the environment in their communications (Holmström, 1997; 2010; Van Ruler & Vercic, 2005). However, no further increase between 2009 and 2012 was found, denoting stagnation.

In summary, this research reveals the dynamic of the social systems and framing of the domains PR, media and the public. In the interplay among their communications the domains move in relation to each other in terms of isolation or rapprochement. The findings show a clear pattern of absence of frame alignment among the domains in the initial and final phase of a crisis and presence of frame alignment in the second crisis phase. The alignment in framing is considered specific for organizational-crisis situations. Whereas social system are normally assumed to be unable to communication in terms of incommensurability (Kuhn, 1970), in an organizational-crisis situation, after the initial phase, they move towards one another, possibly as a necessity of crisis-meaning coherence. This coherence and frame alignment might be crucial to make sense of the complex crisis situation, avoid further escalation and provide conditions for further communication. In other organization-related situation, for example communication regarding CSR policies or advertisements, the meaning provision and framing of the domains may never align due to the absence of high meaning-

coherence necessity. Afterwards, the domains shift away from each other and meaning coherence and frame alignment is absent again.

Regarding methodology, the results show that the automated semantic-network analyses and the newly developed extension for quantitative frame comparison are promising for determining and analyzing framing on the communication level by capturing changes in the implicit frames and quantitatively assessing frame alignment.

DISCUSSION

The current study enriches PR literature in the context of crisis communication and framing. Theoretically, this research extends the field by proposing a theoretical framework of the complex dynamics of crisis-meaning construction and framing by analyzing communicative associations between the domains PR, news media and the public and therefore taking communications as units of analysis. This contribution enlarges the body of crisis communication literature by empirically analyzing the well-established concept of framing on a more complex level, the communication level, in terms of a next-order process of framing and interplay between the communications among the domains. By means of empirically analyzing the communication level this study strives to diminish the ambiguity of this theoretical perspective. Regarding the methodological contribution, a new analytical expansion is developed to advance semantic-network analyses by enabling researchers to quantitatively assess the alignment of implicit frames among domains or research periods. Providing statistical indicators enhances the communication of obtained results[10] and limits interpretative bias. The new theory and method may stimulate empirical investigation of framing on the communication level in related fields as mass and political communication.

Despite theoretical and methodological contributions, the research faces certain limitations. First, case selection may be restricted. In this study, the magnitude and societal

impact of the Max Havelaar crisis may be inconsistent with the other cases. This may explain insufficient data availability and the absent of a consistent pattern of domain interplay and diverging findings. Second, the theoretical perspective of the communication level requires further exploration to settle this concept in relevant literature. Due to the early stage of this conceptualization further research should validate its advancement. Third, with the expansion of the method, emphasizing statistical correlation rather than word-network visualizations, information regarding the visual frame density, specific words and their correlations remains absent in the results presentation. However, by focusing on factor analyses and the factor loadings this approach grasps the essence of this research's theoretically aim, namely the repertoires of word (co)occurrences and their latent structure, representing the implicit frames. In this sense, a need arises for further validation of the method. Future research might investigate the resemblance and variation in findings among the two approaches.

The current research provides certain practical implications for the three domains. It helps PR, news media and the public to realize that they are part of different social systems. Despites this differentiation, domains' framing can align as a necessity of crisis-meaning coherence. Since "perfection of communication implies understanding" (Luhmann, 1986, p. 176) the meaning and frame alignment in the second phase of the crisis may specify 'successful' communication among the domains PR, news media and the public. In terms of differentiation theory, understanding is a unit of difference (of the differentiation) between no-understanding, in the initial and final crisis phase, and understanding, in the second crisis phase. This happens outside the knowledge of actors, implying their limited role and effect. Instead, domains should, normatively, respect their environment and other domains in terms of a reflective perspective. Additionally, by means of early communication domains may advance the establishment of the social system and crisis framing with pre-meaning provision. Practically, early words (co-)occurrence patterns used to give meaning to the crisis situation

might be implicitly adopted and reproduced by other domains. This frame alignment

acceleration may hold that public-panic frames and crisis escalation may be prevented by PR

or news media. However, empirical research should validate this hypothesis.

Notes

1. In his discussion regarding the reality of the mass media Luhmann (2000) speaks of three areas of programming (interpretable as subsystems), (1) news and in-depth reporting, (2) advertising, and (3) entertainment, as part of the overall mass media. Luhmann addresses the recursive interlinking between the strands, despite their clear difference. In their differentiation the strands act as the most important internal structure of the system of the mass media.
2. For a comprehensible overview of the separate steps of the automated semantic-network analysis and for replication of this specific method the author recommends consulting this publication. Moreover, this publication refers to the open-source website where the required software for analysis can be obtained.
3. Generally, a maximum of 75 words is selected in this phase to avoid later difficulties in Pajek interpretation and visualization. Since visualization will not be part of the data analysis a larger number of words is selected to obtain more nuanced results. A maximum of 255 variables is applied due to practical system limitations.
4. Generally, a maximum of six factors is selected in this phase. See previous endnote for argumentation.
5. This labeling process can be employed symbolically, descriptively, causally (Rummel, 1967), or the variable (word) with the highest factor loading is selected as a label (Van Koningsveld, 2012).
6. This approach can be considered as in line with the notion of employing the word with the highest factor loading as the label of the component (Van Koningsveld, 2012).
7. Spearman's Rho correlation is selected rather than Pearson product-moment correlation since Pearson correlation is strongly biased towards linear trends. However, afterwards comparison of the results with Spearman's Rho correlation and Pearson correlation no clear differences were found.
8. Since automated-content analysis allows for large amounts of text processing all the data is included in the analyses rather than a (random) sample. Therefore, comparison is done based on correlation rather than the significance level.
9. Because the hypotheses state propositions regarding similarities and alignment of the framing, rather than differences, only the commonly used words are included in the analyses.
10. This methodological extension advances communication of the results by avoiding an incomprehensible and cluttered presentation of the findings. The automated part of the analysis allows for large amounts of text to be processed. In utilizing this advantage the use of semantic-word networks becomes problematic. In this research for each domain, period and crisis case a semantic-network analysis has been completed to

answer the hypotheses. These analyses would have resulted in an overloading total of 45 word-cloud visualizations.

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APPENDIX

Appendix A. Periodization and data availability overview per crisis case.

Crisis	Period 1		Period 2		Period 3	
	dates	data	dates	data	dates	data
SE Fireworks (2000)	14/05-15/05	PR N = 14	16/05-18/05	PR N = 16	19/05-20/05	PR N = 7
	15/05	Media N = 208		Media N = 455		Media N = 200
	14/05	Public N = 151		Public N = 135		Public N = 57
DSB Bank (2009)	01/10-03/10	PR N = 11	07/10-18/10	PR N = 9	19/10-23/10	PR N = 4
	01/10	Media N = 21		Media N = 826		Media N = 498
	01/10	Public N = 823		Public N = 3966		Public N = 1232
KLM (2010)	18/04	PR N = 4	19/04-20/04	PR N = 6	21/04-23/04	PR N = 2
	15/04-16/04	Media N = 66		Media N = 90		Media N = 141
	15/04	Public N = 916		Public N = 2601		Public N = 502
Chemie-Pack (2011)	06/01	PR N = 6	07/01	PR N = 3	08/01	PR N = 9
	06/01	Media N = 44		Media N = 56		Media N = 17
	05/01	Public N=26496		Public N = 6241		Public N = 5337
Max Havelaar (2012)	10/11-11/11	PR N = 9	12/11-13/11	PR N = 9	14/11-15/11	PR N = 1
	10/11	Media N = 35		Media N = 4		Media N = 15
	09/11-10/11	Public N = 553		Public N = 374		Public N = 48

Appendix B. Rotated varimax component matrix.

This matrix is an example of a small part of the rotated varimax component matrix of the domain media during the second period of the Chemie-Pack crisis. The highlighted values in the matrix indicate the values which will be used for the variable that is included in the analysis of comparison with other domains. These values can be found again in Appendix C as the values of the variable 'factor loading media'.

	Components/implicit frames											
Words*	1	2	3	4	5	6	7	8	9	10	11	12
All	-0,1	-0,11	0,1	0,11	-0,6	0,6	0,44	-0,7	-0,2	0,56	-0,21	-0,8
Amsterdam	-0,9	-0,7	-0,11	-0,7	0,7	-0,5	0,26	0,62	-0,5	0,18	0,23	0,18
ANP	-0,7	-0,11	0	-0,4	-0,12	-0,2	0,1	-0,11	-0,1	-0,14	0,1	0,5
Better	0,34	0,17	-0,12	-0,2	-0,13	0,29	0,22	0,37	0,13	0,27	-0,19	0,21
Brabant	-0,9	-0,5	0,24	-0,6	-0,5	-0,7	0,1	-0,5	0,68	0,47	0,1	-0,5
Company	-0,5	-0,11	0,27	-0,1	0,74	-0,12	0,13	-0,7	-0,3	-0,12	-0,1	0,25
Extinguish	0,8	-0,6	0,7	-0,14	-0,9	-0,7	0,5	-0,7	-0,5	0,5	-0,5	0,14
Extinguishing water	0,6	0,17	0,17	0,67	-0,1	0,15	-0,2	0,29	0	0,2	0,6	0,18
Fire	0,44	-0,7	0,5	-0,3	-0,3	-0,15	-0,18	0,5	-0,8	0,32	0,5	0,11
Fire department	-0,8	0,21	0,22	-0,22	0,8	-0,6	-0,1	0,13	-0,4	0,53	-0,13	0,23
Fire fighting	-0,7	-0,12	0,14	-0,2	0,1	0,35	-0,13	-0,2	0,2	0,29	-0,15	-0,9
Known	-0,3	-0,6	-0,8	0,31	-0,2	0,3	-0,19	0,52	0,27	-0,8	-0,25	-0,12
Seem	-0,6	0,34	0,1	0,3	0,31	-0,5	0,17	-0,16	0,1	-0,4	0,9	-0,26
Stay	0,63	-0,6	0,24	-0,16	-0,2	-0,3	0	0,26	0,37	-0,11	-0,4	0,2
Ect.	…	…	…	…	…	…	…	…	…	…	…	…

*Freely translated from Dutch.

Appendix C. Dataset comparing factor loadings.

This table is an illustration of a small part of the data view part of the dataset constructed for factor-loading comparison between the domain media and public in the second period of the Chemie-Pack crisis.

Words	Factor loading media	Factor loading public
All	0,56	0,1
Amsterdam	0,62	0,66
ANP	0,5	0,14
Better	0,37	0,1
Brabrant	0,68	0,82
Company	0,74	0,13
Extinguish	0,14	0,13
Extinguishing water	0,67	0,56
Fire	0,5	0,28
Fire department	0,53	0,66
Fire fighting	0,35	0,6
Known	0,52	0,5
Seem	0,34	0,75
Stay	0,63	0,61
Ect.	…	…

Appendix D. Crisis emphasis in communication by the domains

		PR	News media	Public
Period 1	N (mean per crisis)	24.7	74.8	5787.8
Period 2	N (mean per crisis)	8.6	286.2	2663.4
Period 3	N (mean per crisis)	4.6	174.2	1435.2
Total	N	37.9	535.2	9886,4
	Mean messages per crisis (N/5)	7.58	107.04	1977.28