Framing: More than language

How (in)dependence of a messenger, and communication strategy could influence the effectiveness of framing in the debate around CO_2 Capture and Storage.

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Keywords: Risk communication, framing, CO_2 Capture and Storage (CCS), messenger independence

The word framing is frequently used in politics. I define framing in this article as emphasizing aspects of a (perceived) reality in a message, with the goal to promote a certain valuation of a problem, or solution. In almost every (political) debate examples of this kind of framing can be identified. For instance in the debate around CO_2 Capture and Storage (CCS), a technology used to capture and store the greenhouse gas CO_2 in an underground geological formation. Opponents of CCS frequently use the frame: 'CO_2-dumping.'

This article discusses framing from a broad perspective. I argue that framing is much more than only the use of language, and other aspects influence framing effectiveness significantly. In this article, I refer to the results of experimental research in which I tested the influence of independence of the messenger and risk communication strategy on the effectiveness of framing. The most important conclusion of this research is that in a technical debate, not only the content of a frame is important; independence of the messenger is relevant as well. Furthermore the risk communication strategy should be considered carefully as well by actors.

Framing

As mentioned, in political debates, the concept of framing is mentioned frequently. A phrase like: 'You are placing a frame,' is literally used in many debates. These observations, or accusations, almost always concern language. Most discussions on framing focus on playing with words and on concepts of language, presumably used by politicians to steer the debate in a certain direction.

However, framing is more. Theoretically framing can be approached from different angles. First, it can be seen as the way a person understands, and values a certain subject. This is defined as an *internal frame* (Chong & Druckman, 2007; based on Ajzen & Fishbein, 1980).
An *external* frame is a message communicated towards a receiver. This message often tries to connect to the internal frame of the receiver. A messenger can achieve this, for example, by using a metaphor (De Bruijn, Van Bueren & Kreiken, 2012), or by using a famous, trustworthy, source to share the message (Ter Mors, Weenig, Ellemers & Daamen, 2006). In this article, I refer to external frames when I only use the word frame, or framing.

In the debate around CO_2 Capture and Storage, the metaphor of *CO_2-Dumping* can be used as a good example of (external) framing. This frame calls to the underlying valuation of the term dumping, which probably has a negative connotation for most people. It feels unfair to *dump* the problem on a certain group of people.

It is hard to unambiguously define when a message is regarded as an external frame. No message is completely neutral, because it is impossible to always tell the complete (balanced) story. In this article, I refer to frames as defined by Entman (1993):

"…to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (p. 52)

To achieve the goals mentioned in this definition a message can be varied in different ways. In this article the variations possible, I denote as *factors*. Four categories of these factors that can influence framing effectiveness are identified (McGuire, 2001):

- Content factors: The substance of a message and formulation. For example the values a frame appeals to.
- Source factors: The attributes of a source sharing the message, e.g. age/sex/profession of the messenger.
- Audience factors: The attributes of the public. Age/sex/intelligence of the audience are examples.
- Contextual factors: The context in which the message is delivered. For example the medium used to deliver the frame or information that is presented before/after the frame

The way these factors influence framing effectiveness precisely is uncertain. However, considerable research has been conducted on factors influencing framing effectiveness. Good overviews are given by Levin, Schneider and Gaeth (1998), Chong and Druckman (2007) and Ashworth, Wade, Reiner and Liang (2015). However, many studies focus only on one factor, (e.g., Levin & Gaeth, 1988; Brunsting, de Best-Waldhober & Terwel, 2013; De Vries, Terwel & Ellemers, 2015), which makes a comparison of effects difficult. Besides, many studies do not focus on problems with a technical complexity (for example Fagley & Miller, 1990; Hänggli, 2011). On top of this, many factors investigated are hard to identify in an actual (technical) debate.

To fill this scientific gap, I conducted an experiment to study framing factors in conjunction, which actually can be identified in the technical debate around CSS.

CO_2 Capture and Storage

Across the world, people seek for possibilities to reduce the amount of CO_2 present in the atmosphere. Reductions have to be achieved, because CO_2 is a main driver of climate change (IPCC, 2013). The storage of CO_2 beneath the surface is one of the measures that can be taken to reduce the amount of CO_2 present in the atmosphere. Since the publication of the Intergovernmental Panel on Climate Change (IPCC) in 2005, a lot of attention has been given to this possible solution.

Briefly, CCS consists of three steps. CO_2 is captured from any installation where considerable amounts of CO_2 are released, such as electricity production or coal gasification plants. The CO_2 is most preferably purified at the same location before transport.

Thereafter, the CO_2 is transported to a site where it is stored in an underground geological formation for an indefinite amount of time (see for a more elaborate description e.g., De Vries, Terwel & Ellemers, 2014). De Coninck and Benson (2014) calculated that the storage of CO_2 has a pure *storage* capacity of 5.000 to 25.000 gigatons of CO_2. The actual storage potential is lower due to technical and economic factors. Still, capturing CO_2 can definitely have a significant impact on the amount of CO_2 present in the atmosphere. Especially considering the total annual emissions of around 35 gigatons according latest estimates of the European Commission (Olivier, Janssens-Maenhout, Muntean & Peters, 2014).

Opinions on CCS largely differ. This was reflected in the fierce discussion around the proposal for a CCS demonstration project in the Dutch city of Barendrecht in 2010. The lack of public support played a key role in the eventual failure of the project (Brunsting et al., 2011). Because public support towards energy projects is influenced by public communication (Jones, Eiser & Gamble, 2012) it is relevant to look at different frames in the communication about CCS.

Many studies have already analysed the debate in Barendrecht and studied the different ways of communication in this debate (e.g., Feenstra, Mikunda and Brunsting, 2010; Terwel, Ter Mors and Daamen, 2012 and Koot, 2014). It seems that communication indeed plays a key role in the acceptation of CCS. Several factors have already been studied, and the experiment I conducted used the findings of the studies mentioned to formulate hypotheses on the effectiveness of factors.

Factors in Framing

As already discussed, several factors influence framing effectiveness. In my study, I investigated two of those factors: The independence of the messenger and the communication strategy. I studied the influence of these factors on the effectiveness of frames. The effectiveness is defined in my study as the ability to influence the opinion of a respondent, and whether it forces respondents into using the frame. Below the different factors will be explained.

Independence of the messenger

Independence of the messenger is a factor that can potentially influence framing effectiveness hugely. The mechanism behind this influence depends on the fact that people process different pieces of information in different ways. Several models describe these processes, such as the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986), and the heuristic versus systematic approach as defined by Chaiken (1980). In this paper, I refer to the model of Epstein (1983, 1990, 1993), called the Cognitive-Experiential Self-Theory (CEST), because it focusses more on individual differences in the preference for a certain thinking style, which can be measured with a relatively easy scale (the Rational Experiential Inventory) as well. The CEST model describes two methods of thinking: Rational-analytic and experiential-intuitive. In the first processing method, pros and cons are weighted and a rational decision is made. In the latter, a more intuitive, unconscious decision is made.

When assessing a message (such as a message about CCS), more independent messenger can lead to more use of the intuitive method of processing information and reducing the scepticism towards a message. Because a frame tries to couple to an underlying internal frame, mostly relying on values, in the second thinking style a frame has more chance to be effective. Therefore, a more independent messenger increases the possibility for the frame to influence opinion (Shiloh, Salton & Sharabi, 2002). A questionable messenger will force respondents more often to critically analyse a statement using the rational thinking style and therefore possibly reduce framing possibilities.

The fact that a more independent messenger influences the possibility for a frame to affect opinion was already proven in different studies, among others, Callaghan and Schnell (2009) and Shmeuli, 2008. Specifically for CCS, De Vries et al. (2015) found a significant effect of a more independent messenger.

Communication strategies

When focussing on the discussion around CCS, a specific area exist where framing is per definition highly relevant: The communication of risks. Risks always deal with expectations for the future, and are by definition uncertain (Sandman, 2012). When uncertainty grows, framing is more likely to be effective (Lakoff, 2004). Furthermore, risks are very influential on individuals' opinion-formation about a project (Olson, Birge & Linton, 2014). As denoted by Noordegraaf-Eelens and colleagues (2012), in risk communication, the most important frames deal with the acceptation of risks, or with the opposite: Rejecting the risk.

In 2010, in his inaugural address at the TU Delft, Michel van Eeten pleaded clearly for a different approach when communicating about risks. Instead of continuously arguing about the size of risks and downplaying risks, a messenger should more often choose for a different division of those risks between different actors. If a bank truly believes their internet banking system is safe, what better way would there be to communicate this, than by offering a full refund of any lost money?

Another good example of a different style of promotion of risk acceptation is the way presidential candidate John McCain presented it during his campaign (McCain & Salter, 2004):

"Fly on the damn plane! Calculate the odds of being harmed by a terrorist! It's still about as likely as being swept out to sea by a tidal wave. Suck it up, for crying out loud. You're almost certainly going to be okay. And in the unlikely event you're not, do you really want to spend your last days cowering behind plastic sheets and duct tape? That's not a life worth living, is it?" (p. 35)

Noordegraaf-Eelens and colleagues (2012) provide more concrete concepts to describe different communication strategies on risks. Deduced from their work, I propose three strategies to convince an audience to (not) accept a risk:

First, the calculation strategy: In this strategy, a risk is acceptable if the (monetized) advantages outweigh the (monetized) disadvantages of the risks. The discussion focuses on (measurement) of the size of risks when using this strategy.

Second, the division strategy can be used. In this strategy, a risk is acceptable if different risks are divided equally amongst a population. When using this strategy. The discussion focusses on risk division between actors and on the different groups carrying the risks

The acceptation strategy is a third option to use in a debate. According to this strategy, risks are acceptable because nothing is without risk. Thus,

rejecting all risk means no action at all. A “life not worth living” as McCain presented it.

From the literature analysis I deduce that in many cases when formulating a frame or story on why a risk should (not) be accepted, not only the calculation strategy should be considered, but also one of the other strategies. This would be a change in what predominantly happens at the moment in actual debates. Especially governments tend to use the calculation strategy almost always.

Experimental research and results

I tested the effects of communication strategy and independence of the messenger together with some other factors in a randomized experiment integrated in a Massive Open Online Course (MOOC) on framing from TU Delft. 1.390 respondents participated in the experiment.

Participants were presented with one of 25 frames about CCS. Independence was manipulated by varying the messenger mentioned in the article. This messenger was either an energy scientist from a Dutch university of technology, a representative of an environmental agency or a CEO of an oil company. Risk communication strategy was manipulated by mentioning only a percentage for the calculation strategy, presenting a division between groups for the division strategy and referring to the impossibility of any project without risk acceptation for the acceptation strategy

Effectiveness of the frames was tested in several ways: Opinion on CCS, and the extent to which a frame was repeated by respondents. Opinion was measured by several questions about attitude towards CCS and support for the technology.

Frame repetition was measured by an exercise. First, participants were asked to mention important elements in the CCS debate, and second, they were asked to formulate frames that can be used in the debate. Thereafter elements and frames were compared with the frames that were presented to the respondents. This way I could test whether the frames I presented triggered respondents into using the same language: Whether the frames sticked.

From this study the independent messenger was seen as most influential, because only with an independent messenger a small difference in opinion for the frames presented was observed. This means that the frame was only effective (able to influence the opinion of a respondent) when an independent messenger shared the message.

The communication strategies showed no significant difference in my experiment. This could be explained by the way differences were manipulated. A stronger difference in the strategies is perhaps needed to prove their effect.

Conclusions and recommendations

The most important conclusion is that framing is much more than language.

Especially independence of the messenger is a very influential factor on the effectiveness of framing. This is also shown by other scholars (ter Mors et al., 2006; De Vries et al., 2015)

Actors that play a role in a debate about risks of a technical project, I advise to carefully consider who is going to share the message. This consideration should, at best, be carried out before creating the frames themselves, because there is a possibility it is way more influential.

Possibilities for further research are mainly present in the area of research into the influence of other factors, preferably in conjunction, in the context of a specific case, such as CCS, and from a practical perspective. By carrying out such research, insight can be created in the influence of different factors on the effectiveness of frames.

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