

CLIMATE CHANGE AND THE RISK MESSAGES OF ENVIRONMENT: A VISUAL SOCIAL SEMIOTICS ANALYSIS OF THE MALAYSIAN AND GERMAN ONLINE NEWSPAPERS

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Abstract

This cross-cultural study analyzes images embedded in climate change story in two online newspapers namely the *Star* (Malaysia), and *Spiegel Online* (Germany) using visual social semiotics approach. The study aims to understand how journalists create and exchange meaning of environmental risks through pictures in a long-term environmental risk effect (climate change). Although, there is much debate proclaim the high risks human beings would face caused by the climate change, there is no concrete visualization to describe what climate change really is. In this sense, public who rely on the media for unobtrusive environmental information such as climate change, would tend to socially evaluate the climate change risks rightly or wrongly based on media depictions of the issue. Unlike other environmental issues such as haze, air pollution, river pollution or oil spills where the impact, effect and risk are visible, public is left (by the media) with their own imagination of risks when it comes to climate change. Hence, the 'right' pictures in news could help to create greater public understanding on risks. Previous research on risks mostly focused on how environmental risks being represented in the news (examining words and sentences) and claim-making made by risks actors such as scientists and government officials, however, this research takes a different approach by investigating risk via signs embedded in the pictures of environmental news. Researcher looked into caption of the picture and headline of the news to cross examine with interpersonal meta-semiotic approach as proposed by Kress and van Leeuwen (2001). Nine news samples with pictures were selected within the timeframe in between 1 July 2014 and 31 December 2014 to mark the UN Climate Change Summit which was held on 23 September 2014. Findings reveal that journalists make sense of climate change risks via pictures by making association to real environmental events. The risks are uncertain because climate change is invisible. Hence its' risks are represented as threat and danger by the Malaysian journalists while its German counterparts depict the risk as a choice. German journalists also use the risk signs to connote economic challenges the country has been facing for the past few years.

Keywords: Environmental risk, climate change, visual social semiotics, Malaysia, Germany

1. Introduction

Environmental risks are often defined as the product of the probability of an event. Its severity is measured in terms of the population exposed and the nature of the consequences (Liverman 2001). Gough (2004) argues that risk by itself has a measure of uncertainty and uncertainty is normal however people usually would react excessively towards uncertainty. Therefore a good communicator must be able to identify the type of risks, the source of the risk, who and/or what of impact and how the event might occur (Gough 2004) in order to reduce publics anxiety towards uncertain risks. In addition, Lachlan and Spence (2010)

contend that risk communication must go beyond identifying a risk and alerting the public as publics are not uniform in their needs, ability to comprehend, willingness to trust and media dependencies.

Publics very much rely on media on environmental issues. Past study on media representation on environmental issues has looked at general ideas of how the issue was covered (Hansen 1993), mostly examining texts and to subject based issues such as the nuclear power station and its effect on the community, Chernobyl, Tsunami, oil spills like Exxon Valdez or earthquakes. Although study on environmental risks messages in the media has significantly increased for the past few years, much attention was given to studying of texts. However this research is taking another approach by focusing on the visual perspectives of environmental risks. In particular, it is aimed at exploring climate change risks messages through pictures embedded in the news using visual social semiotics.

Visual social semiotics is the description of semiotic resources - what can be said and done with images (and other visual means of communication) and how the things people say and do with images can be interpreted (Jewitt and Oyama 2001, p. 136). Interpretation process is culturally (Kress & van Leeuwen 1996, p. 4) and it is deeply affected by one's convention of culture. Thus, this research examines two online newspapers from two different cultures namely the *Star* (Malaysia) and *Spiegel* (Germany) in order to explore similarities and differences of the meaning of climate change risks produce by journalists of different backgrounds.

Problem Statement

Throughout the years, some skeptics including scientists argue that climate change is not real. They also contend that the fact the climatic conditions vary because of volcanism, the obliquity cycle, changes in solar output, and internal variability (Trumbo 1996). Although, there is much debate proclaim the high risks human beings would face caused by the climate change, there is no concrete visualization to describe what climate change really is. In this sense, public who rely on the media for unobtrusive environmental information such as climate change, would tend to socially evaluate the climate change risks rightly or wrongly based on media depictions of the issue. Unlike other environmental issues such as haze, air pollution, river pollution or oil spills where the impact, effect and risk are visible, public is left (by the media) with their own imagination of risks when it comes to climate change.

Good text description on climate change may help public to understand what climate change is; and even better if the text manages to describe how climate change could affect people's life. Still, text may lead to different interpretations of climate change among readers. In general, human beings would visualize an (environmental) issue in order to understand it. An image attached to a text would help readers visualize climate change even though as an abstract object. In order to understand the whole story, next, readers would try to make some connections between the abstract object of climate change they gathered from the image (picture or their own imaginations) to the text, be it caption, headlines or the story itself. It is a long and complicated cognitive process and readers may not arrive at the same conclusion on what climate change is or how climate change could risk their life.

News sources, journalists and editors are among the social actors who are able to shape the news during the process of news construction. Although the interactions among the three actors worth to be studied as no stories could be presented to public without their involvements, I argue, it is the journalist who play the biggest role in deciding what to

include and to exclude in the construction of news for public consumption. In the news gathering process, much time spent by journalists to decide which stories to cover, whom to speak to, what angle the story should be written, the picture and news title. Therefore, it is worth to understand and explore how journalists create meaning and represent climate change to the public. Relatively important to the process is journalists' understanding of the issue as it would help journalists to be able to giving holistic views in their reporting.

Study on representation of environmental issues in the media has long been a central of interest for many communication scholars. Particularly in Malaysia, many researchers pay attention to examining underlying meanings in environmental news using discourse analysis or employing content analysis to identify trends and patterns of environmental news in a longitudinal research. More critical ones explore possible linkages between media censorship or media ownership and the environmental representation or journalistic norms. Also, study on influential factors that shape environmental contents which normally employed in-depth interview or survey. Among the likely factors are journalists' interests on the issue and backgrounds.

Journalists' backgrounds include their beliefs, socialization process and culture. This suggests that an environmental issue, such as climate change, could be presented in many ways depending on how journalists perceive the issue. Basically their perceptions are founded in experience and often reflect community's knowledge and awareness of their surroundings. That is why individuals take into account different factors and characteristics of situation when they are making their own estimates of risk (and benefit) (Gough 2004). This assertion is to be explored further in this study whereby two different online newspapers from two different countries (Malaysia and Germany) are to be examined in order to explore the meaning(s) of environmental risks behind representation of images embedded in climate change stories. In particular, the study intends to understand how journalists create and exchange meaning of environmental risks through signs (in the pictures); to understand how text (headlines, captions) and still images work together to make meaning of environmental risk; and to explore the environmental risks embedded in the pictures.

Representation of Environmental News

It is important to study media portrayal of the environment because the representation is hardly uniform (Cox 2006, p. 165). Much study of environmental representation has looked at general ideas of how the media covers the environment and to subject- based issues such as the Sellafield nuclear power station and its effect on the community, Chernobyl incident, oil spills like Exxon Valdez and Braer. One influence on media depictions of environmental problems is when the audience may know or care little about an issue, so journalists are able to construct the news according to their own interpretations. However, the challenge for journalists is that many environmental problems are unobtrusive; that is to say, it is not easy to concretely link their relevance to our lives (*ibid*, p. 169). This makes it difficult to fit these concerns into the media's conventions for reporting.

Sopher (1995, p. 71) in her book *What Is Nature?* observed that the media project both popular and contradictory images onto nature. Sopher's argument reflects that the popular media depicts the environment as both "the best of friends and the worst of foes," but it does not mean that the representation trends are always stable. For example, the study by McComas *et al.* (2001) of television entertainment programs rated 46 percent of episodes from these shows as "neutral," 40 percent "concerned," and 13 percent "unconcerned" about

the environment (p. 538). Meanwhile, Meisner's (2004) survey of images of nature in a comprehensive study of the Canadian media that included newspapers, magazines, and prime-time television shows, reported that the most prominent representations of nature found in these media could be classified according four major themes: (i) nature as a victim, (ii) nature as a sick patient, (iii) nature as a problem (threat, annoyance, etc.), and (iv) nature as a resource.

The above arguments concerning media depictions of the environment could help us understand how journalists make sense of the environment as an unobtrusive issue. Cox (2006) contends that unobtrusive events - events which are remote from one's personal experience such as chemical contamination, the loss of biodiversity, climate change, and other threats to human health and ecological systems - are less visible, therefore, often go unnoticed by the media for years or decades (p. 170). For example, Hays (1987) reported that toxic chemicals are 'surrounded by mystery' because their effects are not easily observed (p. 173). We rarely notice such toxins in our everyday lives as many toxic chemicals are invisible and their effects on us delayed. Such contamination also may not be an issue for government officials and the media because of this invisibility and lack of immediate impact.

Unobtrusive environmental issues are difficult to cover. Therefore, often journalists report or represent issues in sensational ways (Cox 2006, p. 170). For instance, Wilkins and Patterson (1990) found that newspapers frequently cover 'slow-onset hazards', such as ozone depletion or global warming, in the same way as traditional news stories, as specific events rather than as long-term developments. Another example is the coverage of mercury contamination from old, coal-fired power plants of which the effects in the story center on specific people and events rather than on the less visible, less immediate sources of mercury contamination (Weiss 2004, p. 3). Therefore, Wilkins and Patterson (1990) suggest that in order to cover unobtrusive events, news media often must find an event to link to the story, and such event-centered stories usually attribute the problem to one-time actions by individuals or corporations rather than to longer-term social and economic development. This practice and kind of representation, however, raises an important question about the forces that shape the production of news.

In Malaysia, the environmental news criteria includes small coverage; reports on event stories; straightforward news with very few photographs or other attachments; very small front page coverage; mostly quoting one news source with a high dependency on government officials; topics are cyclical and most stories are framed as conflict (Nik Norma 2008). Also, the trend of environmental news reported by the Malaysian press was found decreasing from 1996 until 2004 due to reducing numbers of event stories. The trend confirms Dunwoody et al's study (1993) that the media mostly report on event stories of environmental news which they see as having high news value (Gans, 1990) for publics as compared to long-term environmental issues such as climate change which do not have an immediate impact on the public. This is the idea of "consensual reality" (Hartley 1982) whereby journalists perceive the public as one entity with same attitudes and needs towards environmental reporting. However, this perception would not be able to help the public to define the environment or to understand the importance of the environment in full, rather than shaping public opinion to view the environment in a negative manner. This is where images attached to the environmental stories could assist people to understand the issue better.

In Germany, the issue of global climate change was first brought up in the scientific discourse (Engels et. al 1996). Representation of climate change in German media basically tailored to

the receiving habits of the the audience. Weingart et al (2015) assert that the German media tend to translate climate change hypotheses into certainties that is an impending 'catastrophe'. The researchers also categorized two phases of media discourse on climate change: First (1975 – 1987) reveals media's low coverage but continuous effort to anthropogenic causes of climate change, and; second (1988 onward) shows that the media continued to speak of an impending climate catastrophe, a terminology widely used to urge action from the political institutions. The peak of attention was reached in 1992 when the UNCED conference was held in Rio de Janeiro. However, the trend has recently changed when the German media made a stance to be skeptical toward climate change. Weingart et al (2015) again assert that the trend was influenced by the American media's coverage. The media are fickle; the researchers concluded, but did not further explain why.

Davydova (2013) contends that much climate change reporting are inconsistent because of high employment of freelance journalists. There are two types of environmental journalism in Germany. First, specialized independent environmental media. Second, specialized environmental media created and largely supported by environmental NGOs or related groups (Davydova 2013, p. 3). The first type was established mainly because the income structure of most media agencies in Germany, which is about 50 percent to 70 percent, is generated from the advertisement, not sales. While originally set up as corporate NGO publications, the second type of environmental journalism, has developed into quality media, attracting professional journalists from mainstream media to provide in-depth reporting and analysis on many environmental issues, which are later to be picked up by the general media.

Davydova (2013) research concurs Weingart et al's (2015) findings on challenges face by the German media concerning climate change which includes media interest towards climate issues seems to fluctuate depending on international or domestic policy priorities. For instance, when the UN Conference on Climate (COP15) took place in December 2009, in Copenhagen, it turned out to be the peak of media interest towards the subject. However, when the new agreement which was supposed to be agreed upon in the conference did not achieve its objective, the German media interest gradually went down. Second, the abstractness of environmental issues and its global character. For example, most German newspapers' coverage on climate change focuses on problems of other regions, such as Bangladesh. Trying to define and explain the complex issue of climate change from Bangladeshi's views for Germans consumption is definitely a difficult task to achieve. Further, it is difficult to turn complex, unfamiliar information and diverse blocks of information, research data, and contradictory opinions multi-layered facts into linear stories which can be understood well by German readers.

The next challenge and the most pressing one is to keep the German readers' interests on the same level in times of local short-term problems and conflicts like the economic crisis. Applying an integrated approach by inter-link the current economic and ecological issues never proved a success. Not many German media are able to keep their audience interested. Further is on the reporting of short-term versus long-term environmental impact. In Germany, long-term environmental issues, like climate change, get less attention from the audience, seem less relevant and hardly making into the news. Nevertheless, stories based on research data seemingly important for German audience and receive much attention. This suggests that regardless of the uncertainty impact, people have greater belief in scientific institutions. The final challenge is the unfriendly interactions between news sources, especially scientists, and journalists. Quite often scientists having a few unsuccessful cases of communication with the media and become disappointed with the way journalists behave.

Some refuse to work with the media or turn the process of interviews into a very long and formal one. As a result, journalists turn to other news sources, the easiest one is government officials, to report on environmental issues. This leads, sometimes, to misleading information or imbalanced reporting.

Risk, Climate Change and the Media

In the mass media, the articulation of the uncertain environmental issues tends to be handled by either silence or denial. Otherwise it will be handled by asserting that risk assessment and risk management are possible and attainable by ‘scientific experts’ (Adam 1998; van Loon 1999; Wynne 1996). What therefore tends to be perpetuated is the denial in public discourses of the risk itself. This is a reflexive of media political struggle. This struggle, as van Loon (1999) points out, ‘not only concerns the definition of the risk in terms of its probabilities and implications, but affects the very core of the problematic of what the “actual risk” is and what “being at risk” is supposed to mean’. In short, audience is left with uncertainty of the risk.

Modern environmental risks, be it radioactivity, biogenetic releases, toxic chemicals, industrial pollution, climate change, according to Beck (1992), often invisible but their potentially catastrophic across the globe is undeniable. This situation has made risks produce contested claims. It simultaneously deepens our dependency upon scientists and experts, even when those same scientists and experts cannot agree on the nature, extent and probable consequences of the risks (Wilson 2003, p. 208). Again, audience is left uncertain.

The mass media also provide an important public arena where ‘rationality’ arises socially. It means that risks are ‘defined and evaluated socially’ (Beck 1992, p. 112). Further, the media gives more attention to scientific uncertainty and is instrumental in raising concerns about particular threats, but at the same time the media also offers reassurance rather than emphasizing tasks (*ibid* 1992). This process is believed to allow audience to evaluate the environmental risk issues effectively. Whilst on media and risk reporting, Kitzinger & Reilly’s research in 1997 revealed that the selection of risks reported in the media does not reflect either the seriousness of the risk or the incidence figures of those affected by it. They also concluded that the factors that influenced the news media’s attention to risks include the knowledge of the journalists. For instance, some journalists shy away from stories where they have difficulty understanding the issues. Other factors are news value and the need for ‘real events’ to serve as news hooks. Most of the time, the human interest factor would sell, especially on environmental disaster story, where once a story becomes newsworthy other media outlets start to address it. The story will continue be favorite by the media if there is an amount of associated activity by pressure groups, professional bodies and politicians. As mentioned above, however, the content is not about the risk, but about emotions and peoples’ life.

That is why most environmental issues depicted in the media are frequently presented as “soft” stories. Similar to Kitzinger & Reilly’s argument, Coote (1981, in Harley 1982) describes soft story as a human interest story, for example, the Exxon Valdez oil spill in Alaska. According to Coote, in Hartley (1982, pp. 80-81), the news is often softened with a human interest style format, for example, pictures of seals before and after culling which call up human emotions of anger, pity and sadness but this is not always balanced by an explanation of the environmental rationale behind this action. Here, Coote debates about journalists’ rhetorical way to attract audience using peoples’ life experience and pictures. It is not bad after all, Coote added, but it may give partly or wholly, different perspectives of

the issue to the public especially to environmental issue such as climate change.

Climate change is a difficult story to recreate for a daily news budget, while a short-term drought episode (or any other weather event) is much easier to visualize and portray (Wilson 2003). It involves abstract and probabilistic science, labyrinthine laws, grandstanding politicians, speculative economics, and the complex inter-play of individuals and societies (Stocking and Leonard 1990). Therefore, visuals are undeniable important to help describing what climate change is. Ninety seconds of testimony is dull for television, but images of scorched land, sweaty brows on farmers and shots of the blazing sun would add the requisite spice to the climate change story. More than simply a source of information about science, the press plays a significant judgmental role (Nelkin 1987). By their choice of words and metaphors journalists convey certain beliefs about the nature of science, investing them with social meaning and shaping public conceptions. Common metaphors used in television coverage of climate change included comparisons with nuclear war (Wilkins and Patterson 1991).

Finding good pictures constrains television coverage of many important science stories, and in the case of climate change, television's visual portrayal is a key element in promoting the 'duelling scientist' debate over global warming. Content analyses of print coverage of climate change also showed inconsistencies in reporting. Moorti's study on climate change coverage in five newspapers in the US in 1991 found that national papers tended to address the national and international ramifications of climate variability, with regional papers focusing on local effects. While, science writers used the term 'greenhouse effect' as a label, non-science writers preferred the term 'global warming' (Wilson 1995).

However, the nature of news is to find a new angle to stories from time to time. This nature contributes to the well-known issue-of-the-month syndrome. It allows the current environmental problems at that particular time to slide out of sight if there is nothing 'new' to report (Stocking and Leonard 1990). The climate change story fits this category well. Often times climate change becomes news is when a fresh study on predicted effects is released or perhaps an international meeting is being held. This is why this research timeline was set between 1 July 2014 and 31 December 2014 to mark the UN Climate Change Summit which was held on 23 September 2014. In the constant effort to present a 'balanced' view, a journalist will seek an opposing opinion and controversy is created once again. As a result, the underlying causes and long-term consequences can be overlooked just for the sake of finding a new angle by deadline.

Journalists and Climate Change

Here, journalists play important roles as mediators to inform and educate publics on climate change. However, the complexity nature of climate change acts as a constraint because journalists may not know how to recognize what is important and may, therefore, miss a newsworthy story. Complexity also is a serious problem for reporters with little or no science background and for news organizations that rely on general assignment reporters to cover climate change. At most US news operations, science stories are usually covered by general assignment reporters who are expected to handle a wide range of stories. But they also lack any kind of scientific training. Both Malaysian and German journalists share the same experiences. In Malaysia context, where some media organizations have their own science and environmental journalists, the most important aspect to look at is how far can they expand their knowledge and creativity in disseminating environmental information to the

public (Nik Norma 2008, p. 248). While in Germany the high use of freelance journalists resulting in at surface coverage of climate change news (Davydova 2013, p. 3). Nelkin (1987) argues that lacking both training and experience, they are less able to evaluate what they are reporting. Hence simplifying climate change stories without proper knowledge about it may perpetuate the perception that the media gloss over complicated stories like climate change.

In addition, climate change is an example of a story that requires not only good journalism skills and scientific literacy, but also an understanding of political dynamics (Wilkins & Patterson 1990). With regards to climate change reporting, Wilkins notes that ‘the science writers knew the science, and in both 1987 and 1988 they reported the science accurately, but the science writers either did not understand the politics of global warming, believed that politics was not pertinent to what they were reporting or were unwilling to tread on some other reporter’s beat to get the political side of the story’. The fact that global warming has political ramifications is not taking into consideration by journalists in their writing. Wilson (1995) further argues that this is especially problematic today, and into the future, as the issue becomes even more politically polarised. He also suggests the portrayal of climate change, in specific its risks, provides a unique nexus between journalism and other disciplines, such as economic, sociology and psychology. Whereas for the past one decade research on climate change has becoming focal of interest among researchers but it has yet to receive such extensive attention in the study of communication field especially with visual social semiotics approach.

Visual Social Semiotics

Semiotics is generally known as the study of signs. A sign can only be existed when we give meaning to it or when there is content (the signified) manifested through some form of expression or representation (the sign) (Harrison 2003). Image is not reality but representation or sign. Signs exist within semiotic systems which encompass human practices. One increasingly popular branch of semiotic is social semiotic. It is a synthesis of several modern approaches to the study of social meaning and social action. According to Lemke (1990), ‘social semiotics includes formal semiotics and goes on to ask how people use signs to construct the life of a community’ (p. 183). In social context, certain groups of people use different signs for different reasons based from their beliefs, cultures, knowledge and backgrounds.

Chandler (2001) suggests researchers to apply three basic principles in analyzing a semiotic system within social semiotics. First, semioticians believe all people see the world through signs or mediation of signs. These signs are related to the ‘signifieds’ (or objects) by social convention which seem ‘natural’ because human become so used to the conventions through daily media encounter, for instance. He argues that the situation makes it difficult for people to realize the conventional nature of such relationship; that is between the signs and the signifieds. Within the context of semiotics study, researchers have to be highly sensitive in identifying, exploring and interpreting the signs (Harrison 2003, p. 48). Therefore, Schriver (1997, p. 156) suggests that professional communicators to use intuition to ‘imagine the audience and draw on their internal representation of the audience as a guide to writing’. However, I argue that not every professional communicator is able to tap into their subconscious information (intuition) to provide guidance for their daily decision. Hence, intuition alone may hardly enable communicators replicate their communities’ discourse in way that could attract interest or please them. Perhaps other factors such as knowledge,

interest and culture may add to the ability to use signs more efficiently in their writing.

Second, the meaning of signs is created by people and it is embedded in their lives and their social/cultural community. Hence, signs have different meanings in different social and culture contexts which makes it difficult for a writer to create messages for people whose semiotic systems are different from his / hers. Third, semiotic systems provide people with a variety of resources for making meaning. Semiotician who studies signs through language may ask ‘what other words could have been used’ (Lemke, 1990, p. 188) in order to effectively convey message to the audience. The ability to choose gives communicators a certain amount of power to use signs in unconventional ways. The power to choose, however, may affect and alter the meanings (Harrison 2003). In sum, within the context of social semiotics, signs are used in many different ways by different communities hence a semiotic analysis by Western semioticians may not be relevant to other traditions who have developed different conventions of imagery and reading.

As readers are no longer rely solely on written text for comprehension, they learn more on what they ‘see’ within a document to create meaning for themselves. Here, images play significant role in helping readers / audiences to get interested to one’s writing, to understand the content and to construct meaning of the write up. According to Harrison (2003, p. 47) ‘image is not the result of a singular, isolated, creative activity, but is itself a social process. Its meaning is a negotiation between the producer and the viewer, reflecting their individual social/cultural/political beliefs, values and attitudes’. In this sense, a new field of study known as visual social semiotics gains increasing attention by semioticians to understand the rhetorical, meaning-making of still images in relationship with text.

Visual social semiotics has been defined by Jewitt and Oyama as ‘the description of semiotic resources, what can be said and done with images (and other visual means of communication) and how the things people say and do with images can be interpreted’ (2001, p. 136). It is a new field of study. In 2003, Harrison argued that communicators have been trained to ‘manipulate’ words to persuade readers to agree with their writings. But the fact that, besides words, still images can also be used for rhetorical purposes. Although visual social semiotics may not be able to answer all the issues that an image may raise, it can be an extremely useful tool for analyzing images and their relationship to text.

It is also important to note that each culture has its own tradition in developing different conventions of imagery and reading. Therefore, again, one’s perspective of Western culture may not relevant to a researcher from Asian countries. However, it does not mean the work in invalid. In fact, a systematic way to conduct visual social semiotics and the need to add the right framework may help researchers to effectively examine the images. For this study, researcher employs Kress and van Leeuwen’s (2001) meta-semiotic approach with multimodality as a guide to explore the climate change risks embedded in the image.

Multimodality to Social Semiotics

The proponent for social semiotic approaches to multimodality is to extend the social interpretation of language and its meanings to the whole range of modes of representation and communication employed in a culture (Kress, 2009; van Leeuwen, 2005). Central to this approach are three theoretical assumptions. First, social semiotics assumes that representation and communication always draw on a multiplicity of modes, all of which contribute to meaning. It focuses on analyzing and describing the full repertoire of meaning-

making resources which people use in different contexts (such as action, visual, spoken, gestures, written, three-dimensional, and others, depending on the domain of representation), and on developing means that show how these are organized to make meaning.

Second, multimodality assumes that all forms of communication (modes) have, like language, been shaped through their cultural, historical and social uses to realize social functions. All communicational acts are socially made, thus they are meaningful within the social environments in which they have been made. According to Bezemer and Jewitt (2010) ‘people assume that different modes shape the meanings to be realized in mode-specific ways, so that meanings are in turn differently realized in different modes’. For instance, the spatial extent of a gesture and the intonational range of voice are all part of the resources for making meaning. The meanings of multimodal signs derive from such resources. The meanings of speech, are located in the social origin, motivations and interests of those who make the sign in specific social contexts (*ibid* 2010). These all affect and shape the sign that is made. Third, the meanings by any mode are always interconnected with the meanings made with other modes co-present and co-operating in the communicative event. This interaction produces meaning. Multimodality focuses on people’s process of meaning making. It is a process in which people make choices from a network of alternatives, (be it actions, visual, gestures) to best represent desired meanings, over another (Halliday 1978).

In relation to the above, social semiotics assumes that resources (actions, visual, spoken, gestures) are socially shaped to become, over time, meanings demanded by the requirements of different communities (Bezemer & Jewitt 2010). These organized sets of semiotic resources for making meaning are referred to as modes. The more a set of resources has been used in the social life of a particular community, the more fully and finely articulated it will have become. In order for something to ‘be a mode’ there needs to be a shared cultural sense within a community of a set of resources and how these can be organized to realize meaning (*ibid* 2010)

Modes can also be understood in terms of Halliday’s (1978) classification of meaning. He suggests that every sign simultaneously tells us something about ‘the world’ (ideational meaning), positions us in relation to someone or something (interpersonal meaning) and produces a structured text (textual meaning). Multimodality sets out to explore how these meanings are realized in all modes. Hence for this study, still images, headlines and captions will be analyzed for the signs of environmental risks.

In 1977, Gibson came out with a concept called Modal Affordance to describe what is possible to express and represent easily in a mode. For Gibson, affordance is ‘a matter of the material perception of the physical world’. By contrast, social semiotics approaches affordance in relation to the material and the cultural, social-historical use of a mode. Compare speech and image, for instance. In specific, sound (basis of speech) are analyzed in sequenced. The logic of this sequence is that ‘sound is unavoidable in speech’. One sound has to be uttered after another, one word after another.

Meaning attaches to the order of words, for instance, or images, differ from (socio-cultural) context to context. As a result of these different material and cultural affordances, some things can be signified more easily in an image, others in writing. A number of studies have described modes in these terms, including Kress and van Leeuwen’s (1996) work on image, Martinec’s (2000) research on movement and gesture, and van Leeuwen’s work on music (1999). As modes have different affordances, people always use different modes

simultaneously to orchestrate complex.

Methodology

For this study, visual social semiotics was conducted on two online newspapers which are the *Star* (Malaysia) and *Spiegel Online* (Germany). There were nine stories with pictures collected within the timeframe between 1 July 2014 and 30 June 2014. The search conducted using archive search on the *Star* and *Spiegel Online* web pages using the phrase “Climate Change” and subsequently substituted with the following word/phrases (i) global warming (ii) storms (iii) wildfire (iv) deforestation (v) desertification (vi) carbon pollution (vii) droughts (viii) extreme weather (ix) typhoon, separately in repeated searches. The study used purposive sampling to select the articles. Each day of newspapers’ publication was examined and only climate change reports with pictures were selected. All the collected articles were coded based on the coding categorization suggested by Kress and van Leeuwen (2001) as below.

Table 1: **Meta-semiotic:** Interpersonal metafunction

Picture	Title & subtitle (What does it reflect)	Caption (Does the caption agreeable with title/subtitle and the visual?)	Interpersonal Metafunction (How does the picture engage the viewers)			Meaning making of risk
			Visual Demand	Intimate Distance	Frontal & Medium Vertical Angles	

Definition of climate change is based on the United Nations Framework Conventions of Climate Change (Article 1) that is:

‘Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’

This includes some phrases interchangeably used with or with reference to climate change such as global warming, greenhouse gases, emissions, climate system and depletion of ozone. Also some notions related to or affected by climate change such as severe droughts, population health, extreme weather events, diseases, water crisis, energy and so forth.

Dependability The unit of analysis is the climate change/environmental images, headlines and captions. The former is the main unit of analysis, whereas the latter were used to cross examine the findings in images. *Coding* In 2003, Harrison suggested a systematic step on how to analyze images using visual social semiotics, however, very little information was given on how to code the meanings embedding in the images (p. 50). As visual social semiotics is a new field especially in communication study, I develop my own coding sheet to analyze visual social semiotics based on Kress and van Leeuwen’s (2001) work and Harrison’s (2003) suggested steps of image analyzing. For this study I divide the coding categorization into four sections: picture, title and subtitle, caption, interpersonal metafunction and a meaning-making of risk. Kress and van Leeuwen (1996) recognize that an image performs three kinds of meta-semiotic tasks – representational metafunction, interpersonal metafunction and compositional metafunction - to create meaning. An interpersonal metafunction is used to explore the actions among all participants involved in the production and viewing of image (Harrison 2003, p. 53). In order to analyse the picture systematically three sub categories which are visual demand, intimate distance and frontal &

media verticals angles are used to engender strong viewer involvement with the image (refer to Table 1).

Results and Discussion

The United Nations (UN) Climate Change Summit was held on 23 September 2014 at the UN Headquarters, New York. Thus, the samples were purposively selected between 1 July 2014 and 31 December 2014 to mark this international effort. Despite being popular and important world summit, there were only 15 climate change stories found in the six months' time period and only nine stories with pictures. Five stories retrieved from the *Star* and another four from *Spiegel Online*. Each story produces one picture except for one in the *Star* which has three pictures which makes total pictures examined were 11. Again, this study aims at understanding how journalists create and exchange meaning of climate change risks - via signs - in the pictures attached with the news. Also, to comprehend how headlines, captions and pictures work together to make meaning of climate change risks. The main argument made by many semioticians is that meaning of signs is created by people based on their social and cultural background. Hence this semiotic analysis by a non-western researcher may not be the same to other traditions and customs.

Image is not reality but it is representation or sign. Journalists create meaning of climate change risks by making association with different types of objects (the signified by social convention) for example flood to reflect danger (the sign – expression or representation) and rainforests to exemplify loss of biodiversity (the sign). The association is made because climate change is invisible (Beck, 1992), whereby it can hardly visualize by people such as haze. Therefore, in order to make sense of climate change journalists exchange its meaning, or rather its concrete visualization, by linking it to real events. In this small context, climate change risks can be said is being represented as 'danger' or 'threat'. Further, journalists also tend to present climate change story as global environmental problem that needs to be discussed at international forum such as the UN Summit; it reflects the risk as extreme measure of threat. Besides the negative connotation, journalists also put climate change risks as a 'choice'. A few visuals examined here depict debates on choices – either economy or environment. Journalists choose to pick on coal power plants and wind turbines as the objects (the signified) to represent economy and environment (the signs). The engagement between viewers (or researcher) and the picture is made by the freedom of choice it offers – either to choose unsustainable methods to alleviate economic growth or do it in a sustainable manner so that environmental risks can be controlled. Related to this is the involvement of personalities - be it a politician, an environmental activist, a scientist - as referential to climate change risks. They are used to confirm, to warn, to debate, or even to deny the existence of climate change. In other words, these people represent 'verification' or 'reassurance' to uncertainty of climate change risks. In short, there are many objects (the signified) used by journalists to exchange meaning of climate change risks with viewers via pictures. Below is the explanation on how journalists create and exchange meaning of climate change risks through pictures.

In general, both the Malaysian and German journalists use similar signs to represent climate change. The signified or object used to represent the sign (climate change risks) are vary with no specific visual consistently portrayed for readers' understanding. The objects stand for climate change can be grouped into four categories which are: individual(s), extreme weather, a perspective and global efforts. Journalists choose influential individuals such as an international leader, a politician or a leading scientist to state argument, to warn, to call for collaboration or to prove that climate change is real. In this sense, they are portrayed as the

mediators (or sometimes as saviors) between the risk of climate change and society. In specific, their role is to make strong call for global efforts to combat climate change. For example, one news published in the *Star* on 25 September 2014 with title 'UN: All hands needed on deck to tackle climate change' used a close up picture of the Prime Minister of Malaysia, Dato' Sri Najib Razak addressing the international crowd at the UN Climate Change summit to demand, not the viewers (and researcher), but the world leaders who present at the world gathering to work together and act effectively to curb climate change. In this shot, he is also portrayed as the representative from the 'other side' of the world who is trying to make an important urge to the Western world. Being the 'other' at the UN Summit makes him an extremely important figure in the climate change story. Besides, huge yet blurry United Nation logo was also captured in the picture as a background indicates the seriousness of the topic of discussion. As a whole the picture indicates that climate change risk is genuine and it could threat world population. On the other hand, *Spiegel Online* on 25 July 2014 also used a personality to counter claim on the existence of climate change. Lennart Bengtsson, a well-known meteorologist, is skeptical if climate change is real. In this news, journalist used a close up picture of him. He appears confidently smiling and his act closely related to the caption of the picture as saying: 'I do not believe it makes sense for our generation to believe or pretend that we can solve the problems of the future'. Both the picture and caption reflect his firm stance that climate change is a metaphor for the world's energy problems and the associated environmental issues. In this sense, climate change risk can be described as a 'scapegoat' for the real global problems.

It is also an interesting finding when some pictures used unknown individual(s) with different role to show association with climate change. On 16 October 2014, the *Star* printed an image of a local man of Beaufort, Sabah, who, in an attempt to save himself from danger of flooding, had to desperately be creative to make use of household materials as a boat. In such a dangerous situation, however, the man's happy expression gives different connotation as to the serious caption of the picture as saying: 'A man turns a basin and spade into a mode of transportation during a flood that hit Beaufort, a town in Sabah in February'. Particularly, the engagement made with the viewers is unclear: Is the image trying to persuade viewers to feel emotionally attached with the situation; or to be inspired with the invention. Either former or latter, journalists in fact are trying to instill human interests' mode in the pictures. In this effort, experts were used to assess climate change risks; while lay persons confirm the climate change risks as real events. This is a rhetorical way how journalists make connection between climate change risks and its assessment made by so-called experts (scientists or politicians). Journalists also connect climate change risk with people's life experience to assist viewers to understand the issue better (Hartley 1982). With too much linkages made with natural disasters such as flooding and landslides, the sign also connotes climate change risk as extreme weather.

Visualization is hard to achieve with climate change, unlike extreme weather. Pictures of extreme weather impacts, such as water crisis and an unexpected mini-tornado, help journalists to help viewers to understand climate change. In this study, a few 'impacts' from extreme weather were found for instance flooding, massive landslide and water crisis. This includes impact on biodiversity. Here climate change risks are about threat and danger. The *Star* covered a story titled 'Dry, muddy, very windy: Malaysian weather goes extreme in 2014' on 15 December 2014 included three images reflecting danger of flooding. First image is on massive landslide which has caused major traffic jam in the city. A few objects portrayed are: a huge rolling landslide swallowed highway with hundreds of drivers caught up in the traffic. The three objects connected with each other to represent 'danger'. Another

image shows an aerial view of Penampang, Sabah, whereby buildings, roads and trees soaked in massive flooding. In this real event, the picture connects human emotions of empathy and sympathy with the viewers. It also indicates that climate change risk could paralyze a city – shut down its economic, education, health and daily life. It is a powerful sign about powerless people. The impact is so robust that it can also trigger mass extinction of biodiversity too. A picture published in *Spiegel Online* dated 1 August 2014 shows possible extinction of rare species of frog (the object) which exemplifies that climate change risk could lead to habitat destruction and loss of food chain, if it is not controlled. Similarly, Malaysian rainforest story which appeared in the *Star*, dated 9 October 2014 with a title ‘Malaysian rainforests significant factor in achieving carbon emissions target’ rhetorically inviting viewers to feel a sense of belonging; with rainforest as an object that represent national heritage to be taken care of. The image of forest also gives a sign of aesthetic values that should be appreciated. The caption, picture and news title concurrently depict the ‘price’ we have to pay if the current pace of climate change continues.

Another object refers as a perspective which has relevance to a view of green technology and unsustainable energy power plants. Both objects are metaphorical of public choice. It gives sign as a prospect of the future but with some economic conflict and political struggle. Both the German and Malaysian journalists used images that show green technology such as wind turbines and unsustainable energy power plant like coal-fired power plants side by side to represent conflict and choice; foe and friend. In German papers, however, the titles and captions confirm the choice made. For example, an article appeared in *Spiegel Online* on 15 July 2014 entitled: ‘Green fade-out: Europe to ditch climate protection goals’ put on an image of heavy smoke from the coal plants clouded the line of wind turbines. It gives signals that Germany has made a choice to please her automotive industry in order to boost economic growth. A picture of solar wind diesel hybrid power included in a news titled ‘Out to accelerate green tech’ by the *Star* also reflects a choice or an option. Explicitly, climate change risk is a political choice. However, the image, which was shot with high angle, indicates literally strong support for green technology. It is parallel with the caption stating that the system offers a lot of opportunities for small and medium entrepreneurs.

Although Stocking and Leonard (1990) claim that climate change would be the issue-of-the-month syndrome if an international meeting is being held, the finding of this study is otherwise. Numbers of stories found is small with only one story related to the UN Summit which has the Prime Minister of Malaysia picture addressing the international participants. Another global effort with numbers of key people in the climate change issues such as scientists, academics and policy makers were also portrayed in a picture embedded in climate change news titled ‘Najib calls for consistent action to reduce carbon emissions’ by the *Star*, 2 October 2014. Although the picture offers less engagement with the viewers in emotion, it reflects ‘hope’ that climate change could be resolved with help and collaboration of some experts.

The rhetoric of climate change risk via pictures mostly used human emotions; there is no explicit visual of it successfully being presented by the journalists. Journalists create the meaning of climate change risk by associating it with other events. Real event is centered in most of the pictures to invite viewers to believe that climate change risk is happening and everyone should play their part in fighting climate change. The underlying risk in most visuals put up by the German journalists is in fact concerning the economic challenges; while it refers to threat in the Malaysian online papers. In short, climate change risk has always been contested for being invisible but their potentially impact across the globe is undeniable.

Bibliography

- Adam, B. (1998). *Timescapes of Modernity: the environment and invisible hazards*, London: Routledge.
- Atwater, T., Salwen, M. & Anderson, R. (1985). Media agenda setting with environmental issue. *Journalism Quarterly*, 62, 393-397.
- Beck, U. (1992). *Risk society: towards a new modernity*. London: Sage
- Bell A. (1994). Media (mis)communication on the science of climate change. *Public Understanding of Science*. 3(4), 259-275
- Bezemer, J. & Jewitt, C. (2010). Multimodal analysis: Key issues. In L. Litosseliti (ed), *Research Methods in Linguistics*, 180 – 197. London: Continuum.
- Chandler, D. (2001). *Semiotics for beginners*.
<http://www.aber.ac.uk/media/documents/S4/semiotic.html>
- Cox, R. (2006). *Environmental Communication and the Public Sphere*. London: Sage
- Davydova, A. (2013). Environmental Journalism in Germany and Russia. Working Papers WP2013-05, Center for German and European Studies (CGES).
- Dunwoody, S. & Griffin, R. (1993). Journalistic strategies for reporting long-term environmental issues: A case study of three Superfund sites. In A. Hansen (Ed.), *The Mass Media and Environmental Issues*, pp. 22 - 50. New York: Leicester University Press.
- Engels, A (1996). Communication and climate change: Phase 1. Paper presented at IWT, University of Bielefeld, Paper 13.
- Gans, H. (1990). *Deciding What's a News: A Study of CBS Evening News, NBC Nightly News, Newsweek and Time*. London: Constable.
- Gibson, J.J. (1977). The Theory of Affordances. In R. Shaw & J. Bransford (Eds.). *Perceiving, Acting, and Knowing: Toward an Ecological Psychology*. 67 – 82, NJ: Lawrence Erlbaum.
- Gough, J. (2004) Changes in understanding, awareness and preparedness for natural hazard risk. *Science Report 2003/2004*. New Zealand: Institute for Geological and Nuclear Science
- Halliday, M. (1978). *Language as a social semiotic*. London: Edward Arnold.
- Hansen, A. (Ed.) (1993). *The Mass Media and Environmental Issues*. Leicester: Leicester University Press.
- Harrison, C. (2003). Understanding how still images make meaning. *Technical Communication*. 50 (1), 46 – 60.
- Hartley, J. (1982). *Understanding News*. London: Methuen
- Hays, S. (1987). *Beauty, Health and Permanence: Environmental Politics in the United States, 1955 - 1985*. Cambridge: Cambridge University Press.
- Jewitt, C. and Oyama, R. (2001). Visual meaning: A social semiotic approach. In van Leeuwen and Jewitt (Eds.), *Handbook of Visual Analysis*, 134 – 156, UK: Sage
- Kitzinger, J. & Reilly, J. (1997). The rise and fall of risk reporting. *European Journal of Communication*. 12 (3), 319 - 350.
- Kress, G. (2009). *Multimodality: A social semiotic approach to communication*. London: RoutledgeFalmer.
- Kress, G. and van Leeuwen, T. (2001) *Multimodal discourse: The modes and media of contemporary communication*. London, UK: Arnold
- Kress G. and van Leeuwen T. (1996) *Reading images: The grammar of visual design*. London, UK: Routledge
- Krimsky, S. (1982). Beyond technocracy: New routes for citizen involvement in social risk

- assessment. *Journal of Voluntary Action Research*. 11(1), 8 - 23
- Lachlan, K.A., & Spence, P.R. (2010). Communicating risks: Examining Hazard and Outrage in multiple contexts. *Risk Analysis*, 30 (12), 1872-1886
- Lemke, J. (1990). *Talking science: Language, learning and values*. Norwood, NJ: Ablex Publishing Corporation.
- Liverman, D. (2001). Vulnerability to drought and climate change in Mexico. In Karperson J. and Kasperson R. (Eds.) *Global Environmental Risk*. NY: UNU and Earthscan.
- Martinec, R. (2000). Construction of identity in Michael Jackson's Jam. *Social Semiotics*. 10 (3), 313-329.
- McComas, K., Shanahan, J. & Butler, J. (2001). Environmental content in prime-time network TV's non-news entertainment and fictional programs. *Society and Natural Resources*, 14, 533 - 542.
- McQuail, D. (1993). *Media Performance: Mass Communication and the Public Interest*. London: Sage.
- Meisner, M. (2004). Knowing nature through the media: An examination of mainstream print and television representations of the non-human world. In G. B. Walker & W. J. Kinsella (Eds.), *Finding Our Way(s) in Environmental Communication: Proceedings of the Seventh Biennial Conference on Communication and the Environment*, pp. 425 - 437. Corvallis: Oregon State University.
- Moorti, S. (1991). *Newspaper coverage of global climate change by five papers*. Paper prepared for the Center for Global Change, University of Maryland.
- Nelkin D. (1987). *Selling Science: How the Press Covers Science and Technology*. New York: W.H. Freeman
- Nik Norma, N. H. (2008). *The Representation of Environmental News: A Comparative Study of the Malaysian and New Zealand press*. Unpublished Doctoral Thesis. Christchurch: University of Canterbury
- Schrifer, K. (1997). *Dynamics in document design*. New York: John Wiley & Sons
- Slovic, P. (1992). Perception of risk: Reflections on the psychometric paradigm. In S. Krimsky & D. Golding (Eds.), *Social theories of risk*, 117-152. New York: Praeger.
- Sopher, K. (1995). *What is Nature? Culture, Politics and the Non-human*. Oxford: Blackwell.
- Stoking, H. and Leonard, J (1990). The greening of the press. *Columbia Journalism Review*. November / December, pp. 37 - 44.
- Tichenor, P., Donohue, G., & Olien, C. (1980). *Community conflict and the press*. California: Sage.
- Trumbo C. (1996). Constructing climate change. Claims and frames in U.S. news coverage of an environmental issue. *Public Understanding of Science*. 5 (3), 1-15.
- van Leeuwen, T. (1999). *Speech, Music, Sound*. London: Macmillan.
- van Leeuwen, T. (2005). *Introducing social semiotics*. London: Routledge
- van Loon, J. (1999). Virtual risks in an age of cybernetic reproduction. In Adam, B., Beck U. and van Loon, J. (Eds). *Risk Society and Beyond: Critical Issues for Social Theory*, 165 - 181. London: Sage.
- Viscusi, W. Kip. (1992). *Smoking: Making the Risky Decision*. New York: Oxford University Press
- Weiss, E. (2004, April 8). Study: Pregnant women eating too much fish. *USA Today*, 3A.
- Weingart P. et al (2015). Risk of communication: discourses on climate change in science, politics and the mass media. *Public Understanding of Science Journal*. 9, 261 - 283.
- Wilkins L. and Patterson P. (1991). Science as symbol: the media chills the greenhouse effect. In Lee Wilkins and Phillip Patterson (Eds.), *Risky Business: Communicating Issues of Science, Risk and Public Policy*, 159-176, Westport, CT: Greenwood Publishing Group.

- Wilkins, L. & Patterson, P. (1990). Risk Analysis and the Construction of News. *Journal of Communication*, 37, pp. 80 - 92.
- Wilson K. M.(1995). Mass media as sources of global warming knowledge. *Mass Comm Review*. 22 (1), 75-89.
- Wilson K. M. (2003). Communicating climate change through the media Predictions, politics and perceptions of risk. In Allan S., Adam B. and Carter C. (Eds), *Environmental Risks and the Media*, 201 – 217, London: Routledge.
- Wynne, B. (1996). May the sheep safely graze? A reflexive view of the expert-lay knowledge divide. In S. Lash, B. Szerszynski & B. Wynne (Ed.), *Risk, Environment & Modernity*, 44-83. London; Thousand Oaks.

