

Animation, documentary or interactive gaming?

Exploring communicative effects of environmental messaging online

Astrid Gynnild, Ph.D.

University of California at Berkeley/ University of Bergen, Department of Information
Science and Media Studies

Paul C. Adams, Ph.D.

University of Texas at Austin, Department of Geography and the Environment

Paper presented at the 13th Symposium on Online Journalism, University of Texas,
Austin, April 20-21 2012

Abstract

Visual genres such as animation and interactive gaming are gaining popularity in online communities, but are still considered peripheral to online news reporting. At the same time, young media users are less inclined to keep updated through mainstream news media, but spend increasingly much time watching YouTube videos and playing interactive games. This paper explores these changing patterns of news consumption by examining the effectiveness of environmental messaging online. In a qualitative, cross-cultural and cross-disciplinary study, students majoring in journalism and petroleum engineering encountered an animation video, a documentary-style video and an interactive game-like approach. In general, environmental messaging was found to elicit feelings of information overload and helplessness among students in both Norway and Texas. However, beneath the feelings of fatigue we identify a layer of untapped curiosity. The study supports the idea that interactive gaming has a large potential for engaging young people in news issues in new ways. Newsgames might be especially well suited for scenario communication in fields dominated by abstract predictions and much uncertainty, such as environmental change. The study also indicates that accountable, non-biased facts and a somewhat humorous approach are important for young people to engage actively in environmental exploration online.

Introduction

Over the past two decades, global climate change has been intensively researched and discussed across countries. Governments, environmental organizations, news media, bloggers, and activists have undertaken multiple approaches to communicate risks of climate change, on a variety of platforms. A common goal has been to increase public awareness and motivate changes in attitudes and actions. The growing engagement is profoundly visible in social media, in particular on YouTube, which is increasingly targeted for pro-environmental messages. On YouTube, more than 450 000 video posts are tagged “environmental videos” (as of March 23, 2012). Filtered by idealistic or non-profit environmental videos, there are more than 66 000 articulations of future effects of global warming, consumption, and non-renewable energy.

This ad-hoc communication on the world’s largest video sharing website and the world’s third most visited website not only supplements, but cross-references, the wealth of environmental news dissemination on other public sites, adding popular voices to those of journalists and environmental researchers.

However, even though a growing number of journalists, bloggers, social activists, and non-profit organizations put much effort into covering the green beat, there is a discrepancy between the prevalence of news and warnings about the environment, and flagging audience interest in the same issues. A number of studies indicate that the risks of global warming and fossil fuel dependency are uniquely difficult to communicate (Wilson 2000; Hansen 2000; Allan et al 2000, Sheppard 2005, Vervoort et al 2010). The findings are supported by a Swedish study

where 14 environmental journalists were questioned about their coverage of the beat (Berglez, 2011).

The experienced communication difficulties are due both to the complexity of environmental issues, and to the many uncertainties related to long-term forecasts. According to Berglez' investigations, climate issues were to some extent considered nontransferable to internal media logic. Reporters found that abstractions and scientific predications about the environment were particularly hard to transform into media discourse. Within the existing news frames, they stretched their creative muscles in order to find ways to visualize abstract data, and to build in elements that the audience in some way could personally identify with. However, there was dilemma, pointed out by Wilson (2000), in the misalignment between small-scale news frames and large-scale science foci: Whereas most people are less interested in climate change in general than in effects on their immediate surroundings, researchers perceive climate science to be better suited to large scale predictions.

Given the extant migration from news media to social media (Baresch et al 2011), including three billion daily views on YouTube (Social Media Observatory, www.socialmediaobservatory.com), in particular young people might be characterized as sophisticated users of new technology and as vast consumers of visual imagery. Even before YouTube was invented, studies indicated that by the age of 18, young people have watched television for more than 25 000 hours and played on average 10 000 hours of video games (Bleed, 2005). Today's youth are very receptive to news alerts circulating in social media networks (Baresch et al 2011, Olsen and Elgesem 2011, Pew 2010). This fact explains how, for instance, some videos posted on YouTube go viral almost instantly. At the same time, recent

reception studies indicate that people between 18 and 26 tend to be bored by mainstream media's news coverage (Hargreaves and Thomas, 2002; Meijer, 2007; Vaage 2011).

Over the last decade, much research has focused on the fact of declining readerships for established news media. However, less is known about why this is the case, and little is known about how changes in media impact on consumers' environmental attitudes and actions. In particular, does the nature of a communication platform carrying environmental messages influence young people's decision making in regard to climate risks? Several studies in disciplines such as geography have applied aggregate approaches to gain more knowledge about collective action and environmental attitudes. But the impact of online messaging on individuals is so far under researched across disciplines,

Thus, this study systematically analyzes the challenges to communicating environmental risk, focusing on the individual rather than the collective level. We take as a point of departure that contemporary news consumers are active users of a host of different media platforms. The perspective is in alignment with McQuail et al's gratification theory from 1972, where a main hypothesis is that audiences actively negotiate with media messages, and that they relate to media as sources of influence among other sources. According to a study of link sharing on Facebook (Baresch et al 2011), close to half (49 percent) of the participants posted links during a three month period. Their study revealed that video social network sites (18 percent) were most frequently linked to. No wonder, probably, since 35 hours of new footage is uploaded every minute on YouTube alone. Every sixty days, more videos are uploaded to YouTube than the three major US television networks have produced during the last sixty years. These statistics do not, however, necessarily imply that either *consumers* or *producers* of digital media messages have developed advanced skills or expertise in *visual literacy*. Bleed (2005) defines visual

literacy as “the ability to interpret, use, appreciate, and create images and video using both conventional and 21st century media in ways that advance thinking, decision-making, communication, and learning” (Bleed, 2005). After several decades of news production studies, a good deal is known about principles for visual storytelling in established media. But we believe that to communicate meaningfully and effectively with their targeted recipients, news professionals as well as citizen journalists would benefit from extending their awareness of how various visual and textual approaches might contribute to innovative and exciting visual storytelling.

Research questions

In light of the above aspects of online communication, this study seeks to contribute new insight regarding the effects of three different visual genres in a particularly challenging field of online messaging. Fossil fuel extraction and energy production issues were chosen due to the complexities and uncertainties associated with global environmental change scenarios, and due to the fact that there seems to be little alignment between the rapidly increasing volume of environmentally focused visual imagery online and relative lack of audience interest in the same topic.

After extensive searches for visual imagery online aligned with research literature, we found ourselves reflecting on several challenges: How can data about environmental change and risk be collected and digitally conveyed in the most effective way? How can various environmental scenarios be presented so as to influence people to pay attention, potentially also change attitudes and habits, and join constructively in collective action? Moreover, in the wilderness of environmental messages pervading social media and the Internet - do established principles of journalism such as accuracy, objectivity, multiple sources and a focus on human

consequences of an issue still matter? These were some of the questions that prompted this exploratory, cross-cultural and interdisciplinary study of online environmental communication.

Data and method

We started out the investigation with a pair of short videos downloaded from YouTube and an interactive web application from the website of an international non-profit organization. The three environmental representations took distinctly different approaches to combining visuals—including animation, icons, live video footage—with verbal cues in the form of "voice-over" narration, printed captions, and category labels.

Both video clips were made by GreenpeaceUK, and are quite typical examples of environmental videos when it comes to number of hits and viewer characteristics. The animated video "Go beyond oil" (www.youtube.com/watch?v=LqaXcY21D5g/) is 2:00 minutes long, was added in 2010 and was viewed close to 4000 times (as of March 23, 2012). So far the clip has obtained 54 likes, 4 dislikes, 28 favorites and 25 comments. According to YouTube's own matrix the video was most popular among girls between 13 and 17 years of age, and among men and women ages 45-54.

The other clip was a documentary-style video "Stop deepwater drilling for oil in the Arctic" (www.youtube.com/watch?v=uVZffYNauSs/) and was also added in 2010. Length 1:36, number of views 4479 (as of March 23, 2012), 26 likes, 4 dislikes, 17 comments and 13 favorites. This video was most popular among men ages 35-64.

The interactive web application included in the study is called the "Ecological Footprint Calculator" (www.footprintnetwork.org/en/index.php/GFN/page/calculators/), which is one of several ecological footprints available online. In this game-like application hosted on the website

of the Global Footprint Network, the player's resource consumption is calculated interactively and expressed in terms of the number of planets that would be needed if everyone enjoyed his or her level of consumption. The Ecological Footprint is based on a complex data-driven metric based on scientific data from 241 countries and regions.

A main aim of our approach was to "understand, and explain, the meanings, beliefs and cultures that influence the feelings, attitudes and behaviours of individuals" (Rabiee, 2004). The materials were thus presented and discussed in six focus groups conducted at major universities in Texas and in Norway. The focus groups were selected through a "purposive, although not necessarily representative sampling of a specific population, this group being 'focused' on a given topic" (Richardson and Rabiee, 2001). Due to the topic we wanted to investigate, we we asked journalism students and petroleum engineering students to participate in the study. The idea was that these students are most likely going to be powerful stakeholders in natural resource management debates of the future. They are resourceful young people who are going to occupy very different professional positions, both nationally and sub-culturally, but linked by shared ties to highly oil dependent economies, those of Texas and Norway. In total, responses from 32 undergraduate students were included in the study, half of them journalism majors and the other half petroleum engineering majors.

The groups were a mix of males and females, where the journalism focus groups were dominantly female and the petroleum equivalents were dominantly male. Group size varied between five to seven participants. The students did not get any information beforehand, either about the video clips or the footprint calculator, except that all presentations dealt with questions of climate change, energy sources and consumption. The "questioning route" was kept consistent

in each focus group for purposes of comparison, and evolved from general to specific issues and from positive to negative frames (Krueger and Casey 2000).

Even though qualitative data analysis is more suitable for identifying attitudes and meanings than searching for objective “truths” as is often the case in quantitative analyses, it is important to minimize potential bias. Thus, the data was analyzed according to the steps of framework analysis, as outlined by Krueger (1994) and Ritchie and Spencer (1994).

The five key stages of framework analysis include familiarization (listening to tapes, and reading transcripts), identifying a thematic framework (writing memos about ideas and concepts and beginning to develop categories), indexing (sifting the data, sorting out quotes, comparing), charting (lifting out and rearranging quotes) and the final stage, mapping and interpretation. One of the advantages of framework analysis is its flexibility in handling evolving patterns in an exploratory approach such as focus group interviews. In parallel with providing a necessary framework of concepts during the initial indexing and charting stages of the data, the technique is open enough to incorporate sudden changes or unexpected findings so that the framework model can be adjusted during the analytic process (Krueger, 1994, Ritchie & Spencer 1994, Rabiee 2004, Dixon-Woods 2011).

Information overload and mental fatigue

The visual imagery presented to the participants evoked both emotional and cognitive reactions. The capacity of visual imagery to elicit emotions has been highlighted in numerous studies, whereas other studies have pointed out the effectiveness of visual imagery in influencing sustainable change of behavior. Among others, Sheppard emphasizes how visual triggers to

behavioral responses might be explained by a close interrelationship between cognition, affection and behavior (Sheppard 2005).

Thus, in this section we provide a conceptual overview of the affective and cognitive themes that emerged from the group conversations. We will go from the general to the more specific. Next, these themes are brought into alignment with gratifications theory, as outlined by McQuail et al (1972). The section concludes with a grounded, assertive list of how the video-clips, and the footprint calculator in particular, could have been improved to be more effective in raising awareness, and potentially also changing attitudes and environmental behavior among a broader spectrum of online users. In the analysis, data is compared cross-culturally and cross-disciplinarily and an overview is provided with quotes illustrating the conceptual abstractions of the analysis.

It emerged from the data that a dominant *cognitive state* among students, across countries and disciplines, is that of *information overload*. The overwhelming amount of environmental messaging in both online and offline media contributes to *mental fatigue*. This exhaustion is verbally expressed through statements of boredom and being tired of hearing about the subject. After watching the videos students repeatedly report that they "have heard it all before" and "seen it all before", there is "nothing new," "it is all routine," and "I'm just not interested in the topic."

To protect themselves from further mental fatigue, release from the state of information overload is sought through *a set of deflective strategies* from which each individual might apply one or more strategies at a time. Typically, young people might choose to *overlook* environmental issues in the media, either by *not watching*, *not buying* newspapers, *not searching* for environmental information and *not embedding or linking*, in case they do access some of it.

News and information they do not like, or do not wish to become aware of, is simply blocked out so that it appears not to exist.

Yet another aspect of the deflective strategy set is *rationalization*, which involves ways of sorting out issues or aspects that can not be proved, statements that in some way or other contains aspects of uncertainty, for instance about global warming or consumption. By means of probability calculus, rationalization protects the individual from having to increase his or her awareness or change his or her attitudes. As a petroleum student from Norway puts it:

I don't think it helps much. I'm getting pretty tired of environmental debates. I don't feel that they undertake the appropriate measuring that I would insist is needed, and I don't believe that [environmental debates] are the solution. I believe that the Earth fixes a lot of this stuff itself...In a geological context it goes in waves no matter what, for millions of years. What we are doing in a time span of fifty years is only a drop in the ocean. It's nothing, in that perspective.

However, behind the expressions of information overwhelm and mental fatigue, feelings of *helplessness* and *powerlessness* associated with environmental changes and risks come to surface. These feelings are remarkably more articulated among journalism students than among petroleum students:

Lots of info, lots to do and lots of demands... We're supposed to do so very much...I believe you think a little bit about it, but it is only a mouse piss in the ocean. We are recycling a tin can, but what about the politicians and the timers on all the public buildings? I can buy this 10 w lightbulb, but what if the lights in the whole building are on all night?

A key explanation to the general disinterest in environment scenarios appears to be that climate change and related issues have been discursively associated with societal structures *outside of individual control or influence*. Overall, students are disappointed with politicians and other people in power, who are viewed as primarily paying lip-service to environmental concerns rather than finding practical solutions. Alongside this helplessness runs a thread of perplexity

about individual versus collective solutions. This finding is in alignment with other studies of environmental messaging (Tickel 2002, Sheppard 2004).

The data indicates that Norwegian students, across disciplines, are more concerned about *lack of collective action* than the American students, since their explanations about “how things are done” emphasized collective, governmental solutions while Americans are socialized to be more suspicious of such solutions and place their faith in ad-hoc, individual responses. The general governmental reluctance to take action on behalf of the population serves as an explanation, at least in Norway, for individual disinterest in the topic. In the United States, the inability of individuals to make a difference may cause it to be understood as an area where things simply cannot be improved.

The misalignment between governmental visions and leadership actions leaves young people confused and sensing themselves to be environmentally helpless: According to Norwegian students “It gets tedious because I don’t know where to start...”, “ You can’t do much about it anyway. Either you are a super-environmental freak, or you are not into it at all,” “Part of the problem is that people don’t know how to take action, even though they know they should.”

Layers of untapped curiosity

Beneath the layers of information overload, mental fatigue, and deflective strategies, however, we assert that there lies a latent layer of untapped curiosity. Our study supports the idea that *interactive gaming* might have a large potential for engaging online audiences in learning experiences (Bogost et al 2010). It appears that interactive gaming can be especially well suited

for *participatory scenario communication*, that is, "descriptions of possible futures that reflect different perspectives on past, present and future developments " (Vervoort et al 2010).

Among journalism students there was virtual unanimity that the ecological footprint calculator, which in this study provides an example of what Vervoort et al (2010) would call a serious game, would potentially be the most effective way of raising awareness and motivating people to change environmental attitudes and behavior. This finding is in alignment with Sheppard (2005), who demonstrated how landscape visualization may help communicating climate change in a compelling manner due to its capacity for presenting models, and thereby making future scenarios real to the audience.

Offensive videos close communication

Before delving into the experience with the rapidly evolving genre of interactive gaming, we will look more closely at the reception of the animation and the documentary-style clip retrieved from YouTube. Why did they fail in communicating their environmental message? Why didn't they go viral?

When initially presented with the three selected visuals, students did not know anything about the background of the imagery, except on what sites they were posted and the fact that the two video clips never took off from YouTube. In this way, the conversations and reflections about the footage material were kept explorative and as unbiased as possible. Through open-ended questions, participants were invited to discuss whether they thought the visuals might be useful in raising people's awareness of environmental issues and if they might change environmental attitudes and behavior. We also asked which of the visuals the participants liked the best and why, and what they learned from the imagery, if anything.

It appeared that even though participants did not have a well-developed vocabulary of visual literacy, their intuitive sense of each visuals' persuasive appeal coincided across national and disciplinary cultures and is supportive of earlier studies of social network sites (Boyd and Ellison 2007, Wallsten 2010).

The documentary-style video, "Stop deepwater drilling for oil in the Arctic," employs a documentary cinema technique with moving camera footage overlaid by print that describes the risks of deepwater drilling in the Arctic. The video cuts together actual footage taken from helicopters in the arctic with still photography, and employs printed rather than spoken text. This approach requires viewers to split their attention between reading and looking at the images. It emerged that *the lack of consistency between text and visuals* in this clip was *cognitively disturbing*. Since there was no audio narrative, only strips of text superimposed on the images, participants got occupied with reading the text and missed part of the visuals in the clip.

Moreover, the *repetition of formulations*, a common grip in advertising, did not contribute to carry the message. On the contrary, the textual presentation was associated with something "unserious and cheap" and "unprofessional", as if it were "cut and pasted in a bedroom." Argumentatively, the clip was stamped "propaganda for insiders," both by Norwegian and American participants due to a lack of "objective information." In addition, the credibility of the clip was considerably reduced by the perceived *one-sidedness* of the message. Emotionally and cognitively, the video's focus on general, global effects, rather than focusing on how the drilling would affect an individual "you", made it utterly uninteresting, according to most journalism students.

Petroleum engineering students, by contrast, were stirred up by the incorporated glimpse of a polar bear on the arctic ice. One participant exclaimed: "There is always a polar bear

showing up in such videos, always!” Another participant said they showed a polar bear “just to make you feel bad.” At the same time, the glimpse was approached analytically. Rational arguments were that the animal footage was a cliché, an unnecessary element. The polar bear reduced the seriousness and believability of the clip. In short, oil students felt offended by the glimpse, rather than empathetic with the bear. Emotionally, the sight of the bear provoked a defensive state of mind. The glimpse clearly contributed to the negative reception of the clip.

The phenomenon might be explained by visual media’s unique capacity to elicit emotions, as they engage both the right and the left hemisphere of the brain at the same time. A video speaks in tandem to the logic and analytical parts of the brain, and to the emotional, intuitive and empathetic parts (Berk 2009). Thus, even though respondents are trying to keep affective aspects at a distance, emotions tend to influence logic and thinking; or as Berk (2009) observed, a “student who is offended by a video clip will withdraw, turn off and harbor anger.”

Another visual element that stirred emotions and triggered discussion among petroleum students was the appearance of an iceberg followed by the text: “Welcome to the Iceberg Alley. As the name suggests, icebergs are the region’s main feature. Here, small icebergs have to be towed away to avoid collisions with oilrigs. For larger icebergs, the rigs have to be moved, and quickly.”

On the one hand, the iceberg glimpses were considered surprising because the issue of moving them was considered new. On the other hand, several petroleum students in Norway and the US explained that they got excited about the icebergs, not out of any kind of environmental sympathies, but for purely professional, engineering reasons: They claimed to be intrigued more than frightened by the dangers of an iceberg potentially colliding with an oil platform, presumably because it was considered an interesting technical challenge.

In sum, the documentary-style clip about drilling in the Arctic fell short in persuasive appeal due to the competitive relationship between text and imagery, the repetitive verbal “bombardment” on top of the image, the general one-sidedness of the message, and the “unnecessary” application of emotionally laden symbols such as the polar bear and also a non-sympathetic glimpse of George Bush. Altogether these aspects made students, particularly petroleum engineering students, feel overloaded and offended, and they quickly turned off.

“Who believes in windmills and sunshine?”

The second video, “Go beyond oil,” employs an animation technique in conjunction with a voice-over narration, arguing that dependence on oil causes pollution and climate change. The animation technique resembles paper cut-outs and minimizes visual detail while emphasizing color and movement.

The animation connected more with most recipients both cognitively and emotionally than did the documentary-style video. Cognitively, it was considered good at holding attention. A key argument was *originality*: The animation technique in itself made the clip stand out from the crowd; the imagery was “different from what we normally see.” More specifically, the graphics, design, and the vivid use of colors contributed to making it *fun* to watch. Several students emphasized that they were having a good time during the two minute presentation. The clip triggered positive emotions, especially among journalism students. It was associated with terms like “thought provoking,” “real life consequences,” and “more eye-catching.” It also scored positive points because of its solution-oriented approach, pointing out clean energy and windmills as future sources of energy. The animated story’s call for action was viewed positively.

However, cognitively, the animation was under particular scrutiny by the petroleum students. It was repeatedly emphasized that the students themselves, not Greenpeace, were experts of the field. In other words, a *lacking credibility of sources* counts negatively. Greenpeace's estimate, claiming that temperatures are likely to rise by six degrees, was intensively disputed. Thus, the *believability* of the animated clip as a whole was considered to be low as well:

Six degrees is a very large estimate. Most say between two and four. Six is at the very outer edge of how much it can rise. Six would be totally devastating to us. This [information] is not directed towards students who have some idea of what's going on. It's aimed at middle school kids or ordinary people who find it exciting to learn something new that they know nothing about. But when I am sitting through this again it becomes a bit boring (laughter)...honestly.

Emotionally, petroleum students were annoyed by the "propaganda" in the videos, which was perceived as an attack on the oil industry. They perceived the underlying message to be part of a blame-game where there was a "we" and a "they", and where the oil industry was the number one villain. In the videos, it was pointed out, oil was associated with something "dirty" and "evil."

In general, at the moment when feelings of attack or blame are triggered, viewers of a video are in reality turned off. At an argumentative level, such emotions might be covered by irony or sarcastic comments, such as who would believe in wind turbines and sunshine changing the world, when "we can not have wind turbines because the sea birds might crash into them, and they look ugly and they make noise."

The defenseless animals in this video, a polar bear and an oil polluted seabird, were assessed a sort of *affective cliché triggers* whose foremost purpose was to provoke feelings of guilt and shame among viewers. The *guilt and shame complex* was considered yet another issue

that made respondents shut out the environmental warnings, although most participants thought the animation communicated better than the documentary.

The quest for learning through exploration

Although all three visuals employ a range of techniques, the interactive features of the ecological footprint calculator make it distinctively different from the video clips. The footprint calculator queries users for information about their lifestyles, then uses this information to update an animated image of the user and his or her home, shopping places, garbage, vehicles, and so on. The calculator displays every user choice in the form of landscape elements in a simulated three-dimensional space, where a user-created avatar walks on a sidewalk beside a grocery store, garbage cans, a dwelling and a vehicle—all of which vary in size and details depending on user-driven choices. The calculator eventually presents a pop-up window with several images of the planet, indicating how many earths would be required if every person on the planet consumed at the same level as the user.

The images in the footprint calculator are similar to those of a popular software product, “The Sims,” a strategic life-simulation computer game. A basic difference, however, is that the data of the ecological footprint calculator stem from a data-driven metric that provides comparable datasets collected once a year from 241 countries, territories and regions. The scientific data are used to quantify the relationship between human affairs and the planet’s finite resources. The calculator from the Footprint Network has been accessible online since 2003, and attracts more than one million visitors a year (personal communication). However, no exact statistics of hits are publicly available.

During the calculator trial runs, the focus group participants became notably curious and energized. They all agreed that they were drawn into the game and that interactivity was fun. The entertainment value was of great importance. Journalism students in particular were enthusiastic because the calculator related to them as individuals, it was concrete, and they could influence the outcome of their footprint by reducing their consumption of food and goods in the later part of the game. Spontaneous utterances were heard on the recording as students clicked through the footprint calculator, and were reflected in references to "cool virtual effects," a "personal" approach, and the idea that it "speaks directly to you."

The *cognitive, exploratory aspect* of the game approach was highly valued: "It provoked my thoughts," "it made me curious," "I got to know what I can do more or less of," "the clicking makes you alert." An American journalism student expressed what many others conveyed indirectly: "I don't really like to be told."

In the conversation following the calculator game, it once more appeared that journalism students were more positive and open towards the game per se than were the petroleum students. The latter found the idea of gaming intriguing and fun, but were highly suspicious of the facts and numbers that came up. For instance, where did it come from that an equivalent of 2, 5 Earths (Norwegians) and 5 Earths (Americans) were needed to keep up their daily consumption?

A common complaint was that the calculator actually did not let them examine the way they wanted to live, but only their short-term situation as students. Inconsistencies and lack of more alternatives were pointed out as weaknesses of the game. If there had been more alternatives or categories to choose from during the play, so as to get more accurate profiles, it was felt that the calculator would have been even more relevant.

However, several of the groups chose not to use all of the details that were built into the calculator and instead selected the option that employs the most general information. These groups subsequently complained about the calculator's lack of precision, indicating that if more precision were built-in, it might not be used. The educational and learning potential of the game approach was stressed by several: "[people] learn all of their wasteful habits", "...this could help people change several of their ways of life and they could change...and I think it is pretty useful", "I learned that I am not as environmentally concerned as I thought I was."

However, only one out of 32 students said she would change her behavior after taking the game test. Interestingly, she was also the only person who said she was already tuned into environmental issues.

There are evidently a host of communicative challenges to be resolved on the path from raising awareness to prompting action and actually changing behavior through visual imagery online. Comprehensive studies of network sites indicate that many participants on large social network sites such as You Tube and Facebook are not really interested in new knowledge or challenging their opinions or attitudes. Rather, they are predominantly searching for and communicating with people who hold similar worldviews, and people they are befriending tend to be a part of their extended social network (Boyd and Ellison 2007). But to the extent that the new generation of social networkers might be more open minded, in what ways could the environmental messaging under the lens be improved to have a somewhat better chance to influence people who are not already "members of the tribe"?

Recipient suggestions on how to get viral

Whereas the students in the focus groups were very clear in their attitudes towards environmental issues in the media, they were just as clear as to what would be needed for videos or other visuals to reach out to larger online audiences.

The key solution is *recommendation*, which implies that users are supplied with links from trustable people in their social networks. The linkers are often bloggers with large audiences, friends or significant others who serve as observation posts, informal news anchors in the vast ocean of online messaging. These linkers sort and select what they like in their fields, and make this information easily available to others. The wish for social filtering was identified also by Baresch et al (2011).

Easy *accessibility* of the visuals through linking and embedding is the practical side of recommendation. Linking and embedding across platforms helps visibility. In particular, students were concerned that important environmental messaging would need to be picked up by TV-stations and used either as news or as ads; “[the visuals] should be right there, so that you wouldn’t have to search for them.” As long as video clips exist for instance on You Tube alone, they are perceived almost as raw data that needs to be picked up and contextualized on other sites to get any impact.

The respondents’ informal analysis of recommendation as the clue to make a visual go viral, is also supported by Wallsten (2010). In a study of online viewership and media campaigns during the US election in 2008, he found that “bloggers and members of the Obama campaign played crucial roles in convincing people to watch the video [‘Yes we can’].” Bloggers and campaign members appeared to “occupy a unique and influential position in determining whether an online political video goes viral” (Wallsten 2010, p. 174), while journalists had little influence on the level of online discussions. The term “viral video” refers to *clips that rapidly*

increase their popularity online through processes of linking and embedding – via e-mail, text messaging, blogs and other means. Viral videos are increasingly “results of people sharing links with each other,” because they find the clips entertaining (Berk 2007, Miller 2011).

Moreover, to actually be picked up and recommended by authoritative linkers and embedders, the visual content would need to be personalized in an appealing way (Berk 2007, Wallsten 2010, Miller 2011, Huang E. 2009). Students agreed that appealing videos are entertaining videos. Such clips are fun to watch, they make you get into a good mood, and as pointed out by some, usually learning gets easier when it happens in an entertaining way: “Of course they can make whatever they want, but it might be that people won’t bother watching documentaries either, so then they should make it with humor and music and stuff that people want to watch.”

Visuals with humor are attractive, and videos would need to contain some empathetic elements that can help build a relation between the message and the consumer. As pointed out by Berk (2007), humor helps taking the edge off controversial issues that otherwise might make people close off. By applying humor, respondents are smoothly and gently being detached from emotions that might otherwise have closed the door to any new learning.

The teaching and learning element was repeatedly emphasized during the group reflections; it became evident that the respondents are always looking for something new to learn, at the same time as they despise “moralizing,” “one-sidedness” and “propaganda.” Thus, pursuing a “blame game” like in the drilling-in-the-arctic-sea-clip, makes students get turned off. The engineering students in particular, claimed expertise arguments for their criticism. The need for problem-solving challenges was frequently pointed out. As evolving experts in the energy field, they are annoyed by “all the people who don’t know what they are talking about.” One of

the silliest things in the media, in their view, is environmental news without a sufficient body of facts. An American petroleum student says, “Yeah, I think for me the video, like, maybe if they had more statistics and facts in it, it would be more effective.”

Yet another dimension that creators of environmental messaging should think about in order to get through in the virtual sphere, is that of target group (Miller 2011). A petroleum student said:

They have to agree with themselves who they want to reach out to. It’s a bit like lobster-and-canary-type of things. [The clips] were a little scientific, a little professional, a bit militant against business, a little funny, a little hopeful, all in a big sauce. If they want to get more clicks, they [the videos] must be more funny and have some action. If they want to provide a sense of feeling for the environment among those who know the technology, they should be much more academic and have a discussion about these issues, good and bad aspects and solutions to what they see as the problem....Do not try to make science in two minutes.

The untapped potential of gaming

The videos in this study were chosen to reflect different mixes of positive and negative appeals, different types of visualization, and different uses of sound. The ecological footprint calculator employs animation and therefore is also strongly visual. While this is only a small sample of possible appeals, it included sufficient variation to open up a discussion of pro-environment communications in general and to assess the attitudes of the focus group members relative to such communication and to members of the other focus groups.

In some ways, the chosen environmental messages may not be directly comparable in their potential for raising awareness among people who are not genuinely interested to begin with. The Global Footprint Network has collaborative partners in more than 20 countries. The calculator has been used for educational purposes since 2003, and there is a growing numbers of users.

According to McQuail et al's (1972) uses and gratifications theory, people choose media to meet their individual needs. More specifically, they use media to fulfill specific gratifications. McQuail et al built the theory on former uses and gratifications approaches by media researchers, and identified four reasons why people negotiate actively with media messages: (a) *Surveillance* (people seek information about things that might affect them or help them accomplish something), (b) *diversion* (emotional release), (c) *personal identity* (self-understanding and value reinforcement), and (d) *personal relationships* (media is used as a social means of information in conversations).

The four reasons for negotiating actively with media messages speaks directly to the findings in our investigation. Whereas the footprint calculator scores high on at least three of the four criteria in the uses and gratifications theory, both the animation and the documentary score low on at least three of the same criteria. Why does the game score high? The most striking feature is that of *diversion*, or emotional release. Respondents think it is fun to play, and they get curious about consumption habits they weren't aware of. Moreover, since they all experience the interactive game differently, they get something to talk about; the game serves as a social utility of information, which potentially *strengthens their personal relationships*. The calculator might also contribute positively to their self-understanding, and thus support their values and personal identities. To some extent it appeared that the calculator served surveillance purposes, too, it provided new information about things that might affect people.

By contrast, the documentary did not support neither surveillance needs, diversion, personal identity, nor personal relationships. The animation was fun and original in its design and thus provided some emotional release, but scored low on the other criteria. This being said, it is likely that documentaries and animations with a different content would have been more

appealing to respondents. Thus, the findings in this study are in alignment both with McQuail et al's uses and gratifications theory from 1972, and with Dan Gillmor's *mediactive* stance from 2010. Gillmor claims that the best way to address the vast information overload of our time is to take an active approach to media. People should be *active users* of the media to better get a grip of when the news we get is accountable and when it is not.

The positive responses from Norwegian and American students suggest that applying a *gaming* approach to complex societal issues might have a great, untapped potential in both social media and the news media, even though the design and experienced fit of the current calculator had some shortcomings.

The term "online games" embraces games in all its forms, from casual games to "serious games," which are both oriented towards special issues, and newsgames (Bogost et al 2010), which actually comprise informative, entertaining and educational approaches to new learning. The footprint calculator qualifies for the term newsgame, as it provides users the opportunity to play with complex sets of scientific data on a non-profit news site.

Whereas play has been considered almost antithetical to knowledge acquisition during the last century, Thomas and Brown (2011), claim that play and games are probably the most under-estimated aspect of productive learning cultures of our time.

Both journalists and researchers are increasingly exploring the potential of newsgames in online media (see for instance Bogost et al 2010, Gee 2007). However, building a sustainable game with relevant categories and alternative outcomes still got some time restrictions to it that make the ideas challenging to deal with in low-cost newsrooms.

Conclusion

Students from two of the most important oil producing regions in the world, Norway and Texas, appeared to be visually literate, critical representatives of tomorrow's decision makers in two crucial fields of any sustainable democracy. But in general, they are overloaded by environmental messaging online. In particular, they are overloaded by what they conceive as propaganda, they are suspicious of information sources, they are wary of emotional appeals, and not sure how to change their lives to respond to such appeals in any case. However, the students were clearly solution-oriented, and in reality, they wanted to contribute to not only raising awareness about environmental issues in society, but to finding new solutions.

Thus, this study suggests that newsgames might be especially well suited for exploring complex individual and collective challenges such as global consumption. A game can help players to experience the issue both by being a part of it and by maintaining agency in some outcome. While playing is fun by itself, the high energies and good moods that come out of playing make the people involved more inclined to open up for new learning.

Despite the indications that interactive web applications communicate environmental impacts more effectively than videos, it was also clear that established principles of good journalism such as thoroughness, accuracy, fairness, independence and transparency remain important in online contexts. Thus, environmental messages that build on a variety of sources and are relevant, fit and focused on the individual's choices in everyday life are more likely to impact awareness, attitudes and actions than one-sided, assertive messages that might evoke feelings of guilt or shame.

Conclusively, we found that young resourceful people are more open to new learning and to changing their attitudes when environmental messages include a combination of accountable

facts, active and engaged participation, and a somewhat humorous approach. The seriousness of the topic of communication does not negate the communicational utility of fun.

References:

- Allan, S., Adam, B. and Carter, C. 2000. Introduction: The media politics of environmental risk. In *Environmental risks and the media*, ed. S. Allan, B. Adam and C. Carter, 1-26. New York and London: Routledge.
- Baresch, B et al 2011. Friends who chose your news. Analysis of contents links on Facebook. Paper presented at the 12th Symposium of Online Journalism, University of Texas, Austin.
- Berk, R.A. 2009. Multimedia teaching with video clips: TV, movies, You Tube, and mtv in the Classroom. *International Journal of Technology in Teaching and Learning*, 5(1), 1-21.
- Berglez, P. 2011. Inside, outside, and beyond media logic: journalistic creativity in climate reporting, *Media, Culture & Society*, 33(3), 449-465.
- Bogost, I et al. 2010. *Newsgames: Journalism at play*. Cambridge, MA: The MIT Press
- Burgess, J. and Green, J (2009). *YouTube: Online video and participatory*, Cambridge, Polity Press.
- Boyd, D.M. and Ellison, N.B. 2007. Social network sites: definition, history, and scholarship, *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- Dixon-Woods, M. 2011. Using framework-based synthesis for conducting reviews of qualitative studies. *BMC Medicine*, 01, 9-39.
- Gee, J. P. 2007. *What Video Games have to Teach Us about Learning and Literacy*. New York, PalgraveMacmillan,

- Hansen, A. 2000. Claims-making and framing in British newspaper coverage of the 'Brent Spar' controversy. In *Environmental risks and the media*, ed. S. Allan, B. Adam and C. Carter, 55-72. London and New York: Routledge
- Hargreaves, I and Thomas, J. 2002. *New News, Old News*; an ITC and BSC research publication, London: Broadcasting Standards Commission/Independent Television Commission.
- Huang, E. 2009. The Causes of Youths' Low News Consumption and Strategies for Making Youths Happy News Consumers. *Convergence*, 15(1), 105-122.
- Krueger, R. A. and Casey, M.A. 2000. *Focus Groups: A Practical Guide for Applied Research* 3rd Edition. Thousand Oaks: Sage Publications.
- Miller, M. 2011. *You Tube for business*. Indianapolis: Que Publishing
- McQuail, D., Blumler, J. G., & Brown, J. 1972. The television audience: A revised perspective. In D. McQuail (Ed.), *Sociology of Mass Communication* (135-165). Middlesex: Penguin.
- Olsen, L. E and Elgesem, D. 2011: Ungdoms forhold til nyheter – en studie basert på mediedagbok. Paper presented at Nordmedia11, August 12, Akureyri, Iceland.
- Pew Research Center for Excellence in journalism 2010. The state of the news media. An annual report on American news media, retrieved from <http://www.stateofthedia.org/2010>
- Rabiee, F. 2004. Focus-group interview and data analysis. *Proceedings of the Nutrition Society* 63, 655-660.
- Richardson and Rabiee, F 2001. A question of access – an exploration of the factors influencing the health of young males aged 15-19 living in Corby and their use of health care services. *Health Education Journal* 60, 3-6.
- Ritchie and Spencer 1994. Qualitative data analysis for applied policy research. In A. Bryman and R.G. Burgess eds. *Analysing Qualitative Data*, 173-194. London: Routledge.
- Sheppard, S R. J, 2005. Landscape visualization and climate change: the potential for influencing perceptions and behavior. *Environmental Science and Policy* 8, 637-654.
- Joost M. Vorvoort et al. 2010. Stepping into futures: Exploring the potential of interactive media for participatory scenarios on social-ecological systems. *Futures* 42, 604-616.
- Vaage, O.F. 2011. *Norsk mediebarometer 2010*. Statistisk sentralbyrå, Oslo.

Wallsten, K 2010. "Yes we can": How online viewership, blog discussion, campaign statements, and mainstream media coverage produced a viral video phenomenon.

Wilson, K. M. 2000. Communicating climate change through the media: Predictions, politics and perceptions of risk. In *Environmental risks and the media*, ed. S. Allan, B. Adam and C. Carter, 201-217. New York and London: Routledge.

