3.4 rethorics of change

Over the last couple of years, climate change has come into the focus of public attention. Moved by television images of dislocated people in far-away countries, ice bears threatened by the corruption of their native environment, tsunami waves flooding the third world, and hurricanes destroying urban areas, the general public is becoming worried by what Al Gore has so aptly characterized as *an inconvenient truth*: the climate is changing and human affluence may be the prime cause.

Given all our new (multimedia) technology, what may we do to counter-act this situation? Creating a web-site, providing information about the climate and the factors influencing climate change? It is unlikely that this would be affective. After all, there are already so many web-sites, about 1001 topics. Adding another web-site would surely not be the way to effect a (real) change of attitude. To enter the media circuls, we obviously need to do better than that. How, this is the subject of this section.

In Climate, we wrote: in response to the *pathos* of the media, many civil groups do an appeal on the responsibility of individual citizens and start campains for an *ethos* of climate-correct behavior, by saving on energy-consumption or driving CO2-friendly cars. In the media, such campains are either advocated or critized by authorities from public government, and experts from a multitude of sciences, with conflicting opinions. As a result, the general audience, initially with genuine concern about the state of our world, gets confused and looses interest. And more worrisome, the adolescents, looking at the serious way adults express their confusion and ignorance, take distance and may decide that the *climate issue* is not of their concern.

Together with the Climate Centre of the VU University Amsterdam, we were not happy to observe that *pathos* and *ethos* overtake the public debate, and we actively wished to participate in the public debate bringing our multi-disciplinary scientific background into play. Moreover, since we *borrow the earth from our children*, as the old Indian saying goes, which Al Gore again brought to our attention, we felt that we must take an active interest in bringing the *climate issue* to the attention of the youth, in a form that is appropriate. From this background, we engaged in developing Clima Futura, a multi-disciplinary undertaking, bringing together climate experts from a variety of backgrounds with multimedia/game development researchers. The Clima Futura game addresses the issues of climate change, not altogether without *pathos* nor *ethos*, but nevertheless primarily focussed on bringing the *logos* of climate change into the foreground, in other words the scientific issues that are at play, and the science-based insights and uncertainties that may govern our decisions in the political debate. Given the state of our knowledge, the science of climate change itself may be characterized as an inconvenient science, and as such an interesting challenge to present by means of a game.

In Climate, we observed that games are increasingly becoming a vital instrument in achieving educational goals, ranging from language learning games, to games for learning ICT service management skills, based on actual business process simulations, Serious. In reflecting on the epistemological value of game

playing, we further observed, following Magic, that the game player enters a *magic circle* akin to a complex social system, where *actors*, *rules*, and *resources* are combined in intricate (game) configurations:

game as social system

actors	**rule(s)**	**resource(s)**
players	events	game space
roles	evaluation	situation
goals	facilitator(s)	context

Leaving the interpretion of the elements of such a (game) system, indicated in the table above, to the reader, we may wonder what meaning games have, and looking at the fantasy items and visual effects of current day video games, we may wonder not only what is the meaning of meaningful elements, having a logical place in the narrative, but also what is the meaning or function of the apparently meaningless elements. The answer is simple, involvement and more in particular emotional involvement due to the in-born playfulness of humans. In oppositio to the common conviction that *gaming is a waste of time*, many authors, including VideoGame, express the opinion that gaming and game-related efforts provide a form of *active learning*, allowing the gamer to experience the world(s) in a new way, to form new affiliations, and to prepare for future learning in similar or even new domains. More importantly, due to intense involvement and the need to analyze game challenges, gaming even encourages *critical learning*, that is to think about the domain on a meta-level as a complex system of inter-related parts, and the conventions that govern a particular domain, which VideoGame characterizes as *situated cognition in a semiotic domain*. Without further explanation, we may note here that *semiotic domain* means a *world of meaning* that is due to social conventions and patterns of communication.

An often heard criticism on educational games is, unfortunately, that, despite the good intentions of the makers, they do not get the target audience involved, or put in other words, are quite boring. This criticism, as we will argue later, also holds for many of the climate games developed so far, and the question is how can we avoid this pitfall, and present the impact of climate change and the various ways we can mitigate or adapt to the potential threats of global warming in an entertaining way, that involves the player not only intellectually but also on a more emotional level? Put differently, what game elements can we offer to involve the player and still adequately represent the climate issue?

Looking at the games discussed in *Playing Games with the Climate*[1], we see primarily games that either focus on (overly simplified) climate prediction models (*logos*), or games that challenge the player how to become climate-correct (*ethos*). In our approach, we not only aim to include (well-founded) *logos* and *ethos* oriented game-playing, but also wish to promote an understanding of the *pathos* surrounding climate change, where we observe that the models taken as a reference are often gross simplifications and from a scientific perspective not adequate! To this end we will, as an extra ingredient, include interactive video as an essential

[1] www.worldchanging.com/archives/003603.html

element in game playing. This approach effectively combines a turn-based game-play loop, with a simulation-loop based on one or more climate reference models, with in addition exploratory cycles, activated by game events, which allow the player to explore the argumentative issues in the rethorics of climate change, facilitated by a large collection of interactive videos in combination with mini-games. In this way we can also contribute to the issue of *media literacy*, or "*mediawijsheid*[2]" as the Dutch Council of Culture calls it, that is making students aware of the impact of the media in presenting controversial issues. In defining our game, we reflected on the following criteria:

criteria

- *relevance* – what is our message?
- *identity* – who are we?
- *impact* – why would anybody be interested?

Actually, when we came accross a serious game in an altogether different domain, we did find the inspiration we were looking for. In the ground-breaking *Peacemaker*[3] game, we found an example of how to translate a serious issue into a turn-based game, which covers both political and social issues, and with appealing visuals, not sacrificing the seriousness of the topic. By presenting real-time events using video and (short) text, Peacemaker offers a choice between the points of view of the various parties involved, as a means of creating the awareness needed for further political action.

Clima Futura is a turn-based game, with 20 rounds spanning a 100-year period. In each turn, the player has the option to set parameters for the climate simulation model. The game is centered around the so-called *climate star*, which gives a subdivision of topics in climate research, as indicated below.

- climate strategies – (1) emission reduction, (2) adaptation
- climate systems – (3) feedback monitoring, (4) investment in research, (5) climate response
- energy and CO2 – (6) investment in efficiency, (7) investment in green technology, (8) governement rules
- regional development – (9) campain for awareness, (10) securing food and water
- adaptation measures – (11) public space, (12) water management, (13) use of natural resources
- international relations – (14) CO2 emission trade, (15) European negotiations, (16) international convenants

Of the topics mentioned, not all may immediately be represented in the simulation model underlying Clima Futura, but may only be addressed in exploratory interactive video. The *climate star* is actually used by the VU Climate centre as an organizational framework to bring together researchers from the various disciplines, and in the Clima Futura game it is in addition also used as a *toolkit* to present the options in manipulating the climate simulation model to the player.

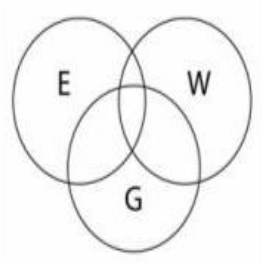
[2] www.cultuur.nl/nieuws.html?nieuws_speeches.php?id=184

[3] www.peacemakergame.com

The result parameters of the climate simulation model are for the player visible in the values for *people*, *profit* and *planet*, which may be characterized as:

- *people* – how is the policy judged by the people?
- *profit* – what is the influence on the (national) economy?
- *planet* – what are the effects for the environment?

As an aside, the choice of models[4] is in itself a controversial scientific issue, as testified by J. D. Mahlman's article on the rethorics of climate change *science versus non-science*[5], discusssing *why climate models are imperfect and why they are crucial anyway.*



game play, model-based simulation, exploration

In summary, see the figure above, Clima Futura combines the following

game elements

1. game cycle – turns in subsequent rounds (G)
2. simulation(s) – based on (world) climate model (W)
3. exploration – by means of interactive video (E)

Each of the three elements is essentially cyclic in nature, and may give rise to *game events*. For example, game events may arise from taking turns after 5-year periods, due to alarming situations in the climate simulation, such as danger of flooding an urban area, or accidental access to confidential information in the exploration of video material. In addition, Clima Futura features *mini-games*, that may be selected on the occurrence of a game event, to acquire additional information, gain bonus points or just for entertainment. Examples of mini-games, are *negotiation with world leaders*, or a climate-related variant of Tetris. Clima Futura also features *advisors* that may be consulted, to gain information about any of the topics of the *climate star*.

For the actual production, we decided to use the flex 2 framework, which allows for the use of interactive flash video, as well as additional (flash) components, including *game physics*[6], a *relation browser*[7], and an *earch*[8] component. In particular, both physics and in-game building facilities seemed to have contributed

[4] www.grida.no/climate/ipcc_tar/wg1/308.htm
[5] www.gfdl.noaa.gov/∼gth/web_page/article/aree_page1.html
[6] www.fisixengine.com
[7] http://der-mo.net/relationBrowser
[8] www.flashearth.com

to a great extent to the popularity of Second Life. In creating *digital dossiers*[9] for contenporary art, see chapter 10, we have deployed concept graphs, that is a relation browser, to give access to highly-related rich media information about art in an immersive manner. Finally, given the topic of Clima Futura, being able to visualize models of the surface of the earth seems to be more than appropriate. It is interssting to note that our technology also allows for the use of *flash* movies directly by invoking the *youtube* API[10] as a web service, which means that we could, in principle, build mini-games around the evergrowing collection of *youtube*, or similar providers.

From a more scientific perspective, providing flexible access to collections of video(s) to support arguments concerning controversial issues has been explored in Vox Populi[11], Vox. The Vox Populi system distinguishes between the following types of argument(s):

argument(s)

- topic-centered – common beliefs, use of logic, examples
- viewer-centered – patriotisms, religious or romantic sentimentality
- speaker-centered – the makers are well-informed, sincere and trusthworthy

These argument types are related to what we have previously characterized as, respectively, *logos*, arguments based on logic, reason and factual data, *pathos*, arguments that appeal to the emotion(s) of the audience, and *ethos*, which in essence does an appeal on the belief in the trustworthiness of the speaker. In Vox Populi, video fragments are annotated with meta-information to allow for searching relevant material, supporting or opposing a particular viewpoint. based on the users' preference, either a *propagandist* presentation can be chosen, epressing a single point of view (POV), a *binary commentator*, which shows arguments pro and con, or an *omniscient presenter* (mind opener), which displays all viewpoints. Although a research topic in itself, we would like to develop a *video content module* (3), that provides flexible access to the collection of video(s), and is media driven to the extent that video-material can be added later, with proper annotation. Together with in-game minigame building facilities, it would be in the spirit of a participatory culture, to provide annotation facilities to the player(s) of Clima Futura as well, to comment on the relevance and status of the video material, Participatory. Yes, indeed, that is where the web-site comes in, after all.

[9] www.few.vu.nl/∼dossier05
[10] www.youtube.com/dev
[11] homepages.cwi.nl/∼media/demo/IWA/