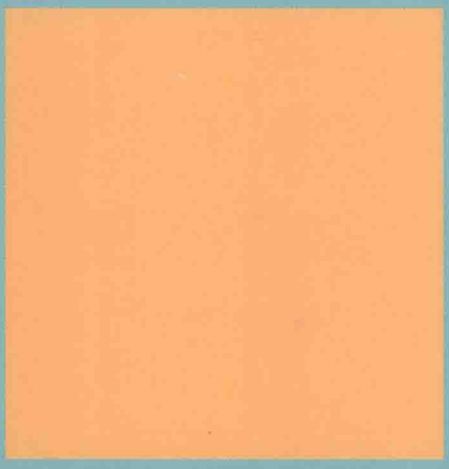

Epistemics of the Virtual

Johan F. Hoorn

Linguistic Approaches to Literature 12

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Volume 12

Epistemics of the Virtual
by Johan F. Hoorn

I am grateful to the
Netherlands Institute for Advanced Study (NIAS)
and the Rector for providing me with the opportunity,
as a Fellow-in-Residence, to complete this book

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Introduction

If we look at the history of multimedia, from the firelight projection shows in China (3000 BC) to the video-projection goggles of today, over the years the speed of inventing new media has increased astoundingly and penetrated nearly all walks of life. As society has become more 'mediated,' we should be concerned with how we understand and deal with the host of virtual creatures, communities, messages, and services we encounter. With the development of graphic engines that are capable of generating hyperrealistic imagery, the distinction between what is 'fake' and what is 'fact' is put under pressure. That does not mean, however, that only mediated communication has virtual elements. Non-mediated, face-to-face communication such as conversations, interviews, and interrogations also can have their fictitious side. People lie, boast, or try to convey a positive self-image.

Being surrounded by multimedia and virtual worlds sometimes may be confusing; yet, talking and thinking about it may be even more so. The terminology that is used for the description of experiences in the virtual world is not well-defined yet. It is a young area that makes use of concepts created for older media such as books and films, which are non-interactive. The newly developed terms such as 'immersion' and 'transportation' are so much under debate that their meanings change while research progresses. This is not wrong or something to be avoided – this book also will redefine many of the older terms (i.e. the concept of 'fiction') but it would be helpful if we could come up with a framework that shows how the various concepts fit together.

There is also an upside to things. Fiction takes place in such a diffuse problem space that it leaves a lot of room for creativity to transpire. If humanity wants to adapt to changing situations and not keep on repeating itself, unclarity is even a prerequisite to come to a genuine innovation. In fact, in Hoorn (in prep.) I will argue that in well-defined and clear problem spaces, opportunities for creative solutions will hardly occur.

This book, then, wishes to describe the different layers in creating and perceiving virtual objects, people, environments, relationships, and transactions. It is an attempt to structure and integrate a number of concepts that people use in thinking about virtual situations. In doing so, it will probably depart from the traditional definitions of realism, truth, metaphor, and fiction. Hopefully, it will take away some of the confusion and allow for a systematic analysis of virtual

encounters – make it conceivable instead of perplexing – and be the first entrance to understand what creativity is about (Hoorn, in prep.).

Such a framework of analysis may have consequences for various application domains. Understanding what fake identities are may affect jurisprudence. Knowing how people respond to virtual exercise coaches on the Web may affect public health. How the comprehension of a visual metaphor connects to the attribution of truth is of interest to, for example, online marketing. Knowing which design features make a virtual environment more realistic or not may guide the development of multimedia technology and creative content (e.g., visual arts).

There are many questions to think about in writing a book on virtuality. Why are people so occupied with things that are not real, pretence, fiction? Kids can be completely absorbed in their play. Some adults have studied Dante's *La Divina Comedia* for all of their lives. Millions of users are online in virtual worlds such as Second Life, There, OpenCroquet, Active Worlds, or Kaneva (Mennecke et al., 2008). People weep in front of soap operas; scholars fight intellectual wars over hoax articles such as Sokal (1996). The Columbine killers are said to be inspired to their massacre by playing the Doom game. How come? What is so involving about fiction? Why would I feel sympathy for Don Quichotte? Why do I like to dance with virtual friends in a virtual nightclub?

Because new media affect so many aspects of our lives, the book has to take a multidisciplinary perspective and hence is agnostic about its sources. It covers communication and cognitive studies as well as biology, computer science, and literary theory. The purpose of citing all those disciplines is to explain but one chart, which you will find in the last chapter. That chart depicts the "Epistemics of the Virtual," a semi-formal representation that proposes how people make sense of what is real or not. Of course, this graph runs the risk of being over-pretentious, incomplete, or overly complex but we have to start somewhere if we want to provide a unifying account of such diverse phenomena as genre labeling, illusions, animated agents, and metamorphosis.

Much of this book deals with the notion of fiction and until we reach the chart in the final chapter, we will be wrangling with that notion all of the time. Because we come across many different aspects of fiction, this will stretch the term such that it goes beyond the typical meaning of the word, which is usually confined to a genre in literature and film that deals with things that are factually not true but at the time of creation were fabricated or 'made up.' I want to probe to what degree scientific models, hypothesis testing, and representations of the physical world are acts of fiction. At times, I would want to consider anything untrue or unproven to be part of fiction. For now, I tentatively advance the position that fiction is discovered when an observation runs counter to someone's belief system

('contrafactual information'). This is certainly not a conventional definition of the term and certainly not all there is to it but let us see where it will bring us in understanding virtuality. As a first introduction to what I am hinting at, we will look at examples that I would regard as being part of the realm of fiction: Camouflage and mimicry, lying and deceit, child's play, the arts, placebo effects, and the genesis of scientific ideas.

To add to its virtual allure, this work is published as an eBook with a paper counterpart. In the eBook, hyperlinked images are readily retrievable from the Internet by clicking the figure captions. In the paper version, the book's Web site contains the corresponding URLs. The list of referenced figures can be found at the end of the book. This solves many of the copyright issues of putting pictures in print.

1. Where does it come from?

It is surely amazing that we understand things that literally are not there. It may have to do with the development of memory, keeping in mind images and events of the past to contemplate different scenarios of the future. This capability of storing impressions of people and places that are not actually present, manipulating their order of appearance, the way they act, changing their looks, is beneficial to prepare for new situations, contemplate the various scenarios, imagine other stories, people, faces. Imagining fictions is a means for creative explorations. However, it also creates the possibility to lie about past events or to deceive people with false promises. Moreover, if we materialize these creative ideas as painted images, written texts, or manipulated photographs, we can make people believe that certain things happen or that certain people exist although they do not. After all, the observers can *imagine* that this is the case.

Being able to put up a fiction is not just a human capacity. Human beings are not the only ones capable of pretence, play, or suggesting something they are not. Animals can lie when they communicate (cf. Trivers, 1985). They can act dead or wounded. The lapwing (*Vanellus vanellus*) simulates that her wing is broken to lure away predators from her hatchlings. But this is still behavior of basically intelligent creatures. However, certain creatures with hardly any cognition going on in their brains evolved special features to outwit other creatures with fiction as well. Mimicry and camouflage are inborn techniques to deceive another being into believing that "I'm not here" (camouflage) or "I'm something else" (mimicry). Next follow some striking examples.

Figure 1. Amber snail infected by a flatworm that tries to make tentacles look like caterpillars (a, b).

When the parasitic flatworm called *Leucochloridium paradoxum* infects the amber snail, the worm sends tubes of spores into the snail's eye-tipped tentacles (e.g., Smith Trail, 1980, p. 87). The tentacles expand, grow colorful shiny rings, and start to pulsate. They are meant to look like two crawling caterpillars to attract the attention of predatory birds (Figure 1). Chemicals interfere with the snail's brain, sending the snail up the trees, where it is hot and dry. Because the tentacles are swollen, the snail is kept from retreating into its shell. The bird tears off the caterpillar-tentacles and in its droppings, spreads the worm's eggs, which are eaten by new victim snails.[1]

In other words, the bird is fooled by a worm. The bird thinks that the infected tentacle is a caterpillar, whereas the flatworm acts as a performer who uses the snail's tentacles as hand puppets to create a show of crawling caterpillars for its audience of birds.

Not only phony caterpillars but genuine caterpillars too can play tricks on their attackers (e.g., Pough, 1988, pp. 81–82). For instance, when the caterpillar of the hawk-moth butterfly *Leucorhampha ornatus* is at ease, it resembles a twig. Once it is disturbed, however, it turns its tail over and pumps it up, while waving it at its harasser. To ward off birds, the caterpillar turns from imitating a twig into simulating a tree snake (Figure 2). Again, the mimicry suggests that one thing (the caterpillar) should be taken for another (a twig or a snake). In this case, the hawk-moth caterpillar changes the form that helps to stay unnoticed ("I am only a twig") into a form that makes it look scary ("Back off, I'm a snake").

Figure 2. Non-human make-belief. Mimicry of the hawk-moth caterpillar.

Butterflies also have other means to escape from their aggressors. Well known are the color patterns of moths that look like tree skin. If the moth does not want to be caught, however, it should stay on the trunk and not sit on a green meadow. Glass wing butterflies, however, have found a way to become transparent (Hall, 1996). The tissue between the veins in its wings are translucent so that it can change sur-

1. For a video clip of the snail tentacles that resemble caterpillars, check out http://www.youtube.com/watch?v=EWB_COSUXMw

roundings while always be in camouflage (Figure 3). "You can see right through me," she says. "Although you think I'm here, in fact, I'm not."

Figure 3. Glass wing butterflies, the ultimate camouflage (a, b).

As can be seen from these examples, dealing with fiction in the form of fakes and frauds is widespread and only natural. Mimicry and camouflage may be seen as an animal's psychological weapons (Hingston, 1933). Our human counterparts of these techniques are lying and deceit. Therefore, the way false representations work should be analyzed closely so that we can enjoy them (e.g., in art) and not be victimized by them (e.g., when cheated upon).

2.1 Fakes and frauds

It seems only natural to lie because it has benefits for survival and wellbeing. Creating a fiction through lying may help acquire the necessary information or helps to avoid punishment (e.g., Cole, 2001). Army soldiers wear camouflage to deceive their enemies (cf. the butterfly on a tree trunk). Undercover detectives infiltrate a criminal organization by imitating the suitable style and behaviors (cf. the flatworm example). In this sense, fiction is established when deliberately telling untruths, by tactful white lies, social insincerities, or political rhetoric. And sometimes the fiction is not meant as a deliberate lie but is the result of a mistake.

There seems to be no day without people telling bigger or smaller lies. People do not consider them too harmful and do not worry too much about being caught (DePaulo et al., 1996). One can lie to harm but also to protect others (DePaulo, 2004). Perhaps in no other area "is the line between good and evil more blurred than in the case of lying and deceit" (A. G. Miller, 2004). Sometimes lying can become so compulsive or pathological that psychiatrists consider it a mental illness (*Pseudologia fantastica*).

One way to catch a lie and to expose the fiction is to ask for evidence, which is common practice in the scientific community. Unfortunately, however, this approach is not watertight. For example, a highly credible journal like *Science* with highly credible reviewers was fooled twice by the fabricated data of professor Hwang from Seoul National University in Korea (Hwang et al., 2004; 2005). Professor Hwang and his colleagues studied stem cells (pluripotent cells that can be functional for many kinds of tissues) to repair human tissue with its own cells. Professor Hwang claimed that his team cloned a human embryonic stem cell and

'showed' that the DNA was identical to that of the donor. He moreover claimed to have generated patient-specific embryonic stem cells from cloned pre-embryos. Being relished as a scientific hero at first and a true stem-cell pioneer, professor Hwang's 'evidence' was a duplicate of photos instead of duplicates of cells (Figure 4). So the world was fooled by media use (copy-paste). *Science*'s initial explanation was that this was only a photo mix up, an error that did not harm the main conclusions of Hwang's papers (Ebert, 2005). After a research committee went over Hwang's work, however, *Science* had to retract the two articles (Kennedy, 2006).[2]

Figure 4. Photoshoped 'evidence' of stem-cell clones.

In other words, we need to make a firm distinction between someone's credibility (whether we consider a person trustworthy and believable) and the correctness of the information a person dispenses. *Science* as a journal is a highly credible source but the information it presents is not necessarily correct (and hence, 'fiction'). A university professor supposedly is a highly credible person, but well...

Let us suppose that some piece of information is correct, then there are still all kinds of interpreters who bring the news to us. Television, newspapers, and Internet newscasts handle information their own way (Box 1 provides an audacious example). 'Dolphins communicate like humans by calling each other by name' so the BBC reported (BBC News, May 8, 2006).[3] "Dolphins name themselves with

Box 1. Newspaper fraud

In 2007, Faure and Riché of the Internet newspaper *Rue89* revealed that the highly estimated research journalist Alexis Debat published fake interviews with world leaders in outlets such as *The Financial Times, Time,* and *The US News and World Report.* He was caught when he published an 'interview' with presidential candidate Barack Obama, whereas the candidate's press office did not know about the matter and became suspicious. Alexis was often consulted (e.g., by ABC News) as an expert on Middle East terrorism although most of his stories were made up (Retrieved Aug. 27, 2009 from http://www.rue89.com/2007/09/15/how-alexis-debat-managed-to-cheat-everyone-in-washington).

2. Read about the whole story at http://www.sciencemag.org/sciext/hwang2005/. At MSNBC, you can read an article about the Korean apology (http://www.msnbc.msn.com/id/10811959/).

3. Retrieved Dec. 13, 2007 from http://news.bbc.co.uk/1/hi/scotland/edinburgh_and_east/4750471.stm

whistles" is what National Geographic News announced (Owen, 2006). And if we can rely on the quotes of the principal investigator Vincent Janik (St. Andrews University), this indeed could be assumed. Janik for BBC News (May 8, 2006): "I think it is a very exciting discovery because it means that these animals have evolved the same abilities as humans." That actually was quite a sweeping statement considering the evidence Janik reported in the scientific paper for the National Academy of Sciences (Janik, Sayigh, & Wells, 2006). The results tell us that the scientists used no more than 14 animals of which only 9 responded by looking into the direction of where the sound of the close relative came from, three did nothing, and two actually turned their heads away. If the dolphins could look left or right, that means only 2 dolphins acted above chance level (7 = 50%). The news reporters need not be great statisticians to know this was quite a small basis to pass on the word that 'dolphins name themselves' or that they 'communicate like humans.' In other words, fiction may transpire not only due to lying but as the case of the talking dolphins illustrates also because information is delivered in a biased or exaggerated way. It is not untrue but not quite realistic either.

2.2 Placebos

There are also examples in which bending the truth a little has beneficial effects. The stem-cell case was sheer academic fraud and the dolphin example an overgeneralization of an interesting observation but, for instance, using placebo drugs without knowing that they are not pharmaceutically active may be 'deceitful' but does yield positive health effects.

Placebo drugs in medical treatment are often seen as pleasers (cf. Box 2) rather than active medicine, the notorious 'sugar pills.' Users would mistakenly think that the drug affects the malady and this 'illusion' would positively impact recovery. Certain people may object to telling a white lie like this but apart from the pragmatic position that whatever helps should not be expelled; the white lie of the placebo treatment also is functional for empirical control of the effects of real phenomena.

Box 2. The word placebo

"Placebo Domino in regione vivorum" (I will please the Lord in the land of the living) (Psalm 114, verse 9). In the Middle Ages, mourning at a funeral was often left to hired stand-ins. These mourners would sing Psalm 114 and hence were called 'placebos' (De Craen, 2004).