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MSc Science Communication

Visualizing the Invisible: A Semiotic Analysis

Assignment 2 in The Media Representation of Science

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Perhaps controversially, for this essay I decided to analyze my own work. I did not set out to do this, but while looking for an interesting and powerful text, once the cover of the March issue of Estonian popular science magazine *Tarkade Klubi* came to my mind, it refused to leave. As the editor of the magazine, I wrote the cover story and selected images for the cover, so my connection to them has been very intimate. Yet I hope I have become detached enough as many months have passed and with the help of newly acquired semiotic tools I am now able to look at the result very differently. And perhaps it is also intriguing in the end to switch roles again and present the line of thinking I used as journalist when I constructed this cover.

The powerful symbol that hooked me was invisibility. Symbols often draw their strength from binary oppositions like natural/mechanical, good/evil, rational/emotional etc. The magazine cover I will analyze plays with many such oppositions and is therefore a grateful object for deconstruction, especially because, as we will see, image and text will use different discourses in framing the topic.

The article was inspired by the development of 'the cloak of invisibility' or metamaterials with a negative refraction index – a work that Professor John Pendry of Imperial College is one of the leading experts. I am not going to analyze the article itself or accompanying images in this essay, my focus will solely be on the magazine cover.

The visual image on the cover (see attached page)¹ is not complex – we see a dark coat with raised collar, a similarly dark hat, slightly tilted forward, both indicating that they are being worn at the very moment. But the place where the head is supposed to be, is empty; the

¹ The cover can also be downloaded in pdf-format from www.hot.ee/aolesk/TK_032008_kaas.pdf

background, clouded sky, fills the space between them without any visible disturbance.

Behind the shoulder of the coat a little patch of varicoloured forest can be seen, it's autumn.

The text says: *Invisibility is within reach. Novel metamaterials hide objects from the human eye.*

It is the lack of the body that leads us to perceive this as the sign for invisibility. The signified is a mental concept of something that is there, but what we cannot see. This by itself leads to the fact that for this sign there cannot be a signifier, a physical existence of the sign in the same way that the drawing of a hat is the signifier in the sign of the hat. It is the combination of coat, hat and the sky (which separately have no connotations with invisibility *per se*) that create for us the sign of invisibility (yet we can claim that in that way the sign is very iconic – resembling the concept).

The sign is created by the constellation of hat and the coat, because their position leaves no doubt that they are being worn: there is no other plausible situation where these items could be situated like this. This setting introduces the powerful binary opposition – that of being/not being. That, of course, relies on the underlying assumption that it is the visual stimuli we dominantly use to make sense of the world: what we can see it what we instinctively consider to be real and existing and vice versa (unless we have culturally learned otherwise: like in desert we are likely to see a mirage, which we know not to be real; or washing hands to fight bacteria that exist and cause diseases but are too small to be seen with the human eye). In case of a magazine cover, visual is the only sense the reader can use to make judgements.

To use the term of Levi-Strauss, the concept of invisibility is anomalous, lying on the border of categories people use to make meaning of the world. Visible/not visible is the first level of

oppositions where the sign works, at the same time connoting to being/not being, very strong and most basic categories, making the concept of invisibility a particularly powerful myth.

Several aspects of the sign connote to us uneasiness and even anxiety. The sky is not clear; it is thickly covered by threatening-looking cirrus clouds. The hat and coat are dark, the collar is turned up, and the hat is tilted forwards: all signs of the wearer trying to hide or remain unrecognized. Probably he is up for some shady business, the reader might think.

This uneasiness draws on the stereotypes of invisibility brought to us by popular culture. First, the stereotype of people in dark coats and hats being suspicious is widely used, especially in stories set in the first half of the 20th century. Second, invisibility itself has many unpleasant connotations deriving from its presentation in modern culture.

The theme of invisibility is not very common in historical texts like folk tales or religious myths. Although Plato discussed invisibility in a thought experiment in his *Politeia* (*Republic*), it is H.G. Wells who can be credited for creating the contemporary myth on invisibility along with all the connotations.

The Invisible Man by H.G. Wells was published in 1897 and introduces the ambitious scientist Griffin who manages to achieve invisibility. But an unwanted side-effect of the serum is moral degeneration, «gradual and cumulative» (Daly, 1995: xxxiv). Griffin commits numerous crimes and demonstrates a marked nihilism in accounting for them (*ibid.*). «I was invisible, and I was only just beginning to realise the extraordinary advantage my invisibility gave me. My head was already teeming with plans of all the wild and wonderful things I had now impunity to do» (Wells, 1995: 93). «And I beheld, unclouded by doubt, a magnificent

vision of all that invisibility might mean to a man – the mystery, the power, the freedom.

Drawbacks I saw none» (*ibid.*: 84).

Wells' novel is therefore about power and moral. Science (replacing magic) is the vehicle that allows one individual to get enormous power into his hands, but the power inevitably corrupts him. This has been the common feature in many cultural presentations of the topic of

invisibility: one notable example is also *The Lord of the Rings* trilogy by J.R.R. Tolkien.

Wells' *The Invisible Man* has also inspired several other texts. The 2000 film *Hollow Man* by Paul Verhoeven also shows the psychological transformation of the scientist after becoming

invisible. Ralph Ellison 1952 novel *Invisible Man* deals with racial issues but includes many intertextual references to Wells, like the statement that «irresponsibility is part of my

invisibility» (cited from Schwarz, 2002: 240). The ethical aspect of the vast potential of

science was especially emphasized in the 1933 movie adoption of *The Invisible Man*, where at the very end the dying scientist says: «I meddled in things that man must leave alone» (*ibid.*:

237).

Invisibility also has more neutral or even positive uses in popular culture – and these are the ones science articles usually refer to. «It's not yet clear that you're going to get the invisibility

that *everyone* thinks about with Harry Potter's cloak or the Star Trek cloaking device²,» Duke University professor David R. Smith said in 2006 (*First Demonstration...*; emphasis added).

This could be considered an almost ideological choice of words by the scientist working on a real world invisibility tool: framing their work with references to popular culture but only

with those of a technological discourse that have a positive or neutral angle and claiming that

² This aspect is also very dependant on the cultural background. For me the first association with invisibility is the novel *Koko kaupungin Vinski* by Finnish children book author Aapeli. This was adopted into a popular TV-play in Estonia in 1980s so this, rather than Harry Potter or Star Trek were part of my childhood. In the novel and TV-play a boy called Vinski gets some invisibility powder from the local chemist and uses this to play small tricks and help fellow citizens.

this is what everybody thinks of when they ponder about invisibility. Yet, as we have just seen, the negative connotations of invisibility are also strongly present in culture and the by composing the sign of invisibility from suspicious-looking clothing and restless sky, this magazine cover conveys a threatening message³.

Another aspect that connects this text to Wells' *The Invisible Man* is the nature of invisibility. Schwarz (2002) has analyzed how portrayal of invisibility has changed in science fiction, noting that when in former times only magic or supernatural forces had the power necessary to turn people invisible, science has now taken their place. Invisibility has become a subject matter of medical and biotechnological discourse working with the idea of medically influenced transformation of the body (Schwarz, 2002: 232). Although I would dispute that there has been complete shift of invisibility from magical to medical theme⁴, the distinction between those two is important and fruitful in semiotic analysis.

This distinction can be described as another binary opposition: internal/external. In first case (which Schwarz classifies as medical) the source of invisibility comes from the body, the body transforms itself invisible, with the help of some serum or pill. In the second case (magical or technological) the power comes from an outside object like a ring or a cloak.

Both discourses attribute different weight to invisibility. In the technological discourse, invisibility is easily achievable by – for example – putting the ring in the finger. And it is as easily reversible by taking it off again. Whereas in the medical discourse the question of how to become visible again is often the main one. Psychological side-effects can occur in both

³ It would have been interesting to compare visuals of the same story in several outlets. But I failed to find any other magazine with the invisibility topic as the cover story.

⁴ Medical discourse is not suitable for many types of fiction. Harry Potter's cloak is a recent example of magical theme and also *The Lord of the Rings* was written well after Wells introduced the medical discourse. Reflecting the popularity on these two examples I would not claim medical discourse has replaced magical.

discourses (e.g. *The Lord of the Rings* for the technological discourse), but are more common in the medical discourse. We see that the medical discourse has more serious connotations.

The cover image represents the medical discourse: visible clothes cover the invisible body; therefore invisibility must be an innate property of the body. But when we examine the text, this clearly represents the technological discourse: *Invisibility is within reach. Novel metamaterials hide objects from the human eye.*

Here invisibility is presented in an even more technological discourse by attributing the invisibility to ‘objects’ only. The actors, those that ‘hide objects’ are metamaterials: a term that probably has no meaning for the lay reader except that they recognize this to be something very sciency and advanced (‘novel’). Humans are passive observers; their role is so diminished that they themselves are merely reduced to an eye. And the text claims that invisibility of any kind is not yet achieved – it is only ‘within reach’ (metaphorically, of course).

We see that the image and the accompanying text contradict each other in several aspects: the represent different discourses of nature of invisibility (medical *versus* technological); it also plays on the opposition nature/science for the image implies invisibility being an innate or even natural property of the body and that is enhanced by the natural setting of the scene (forest and sky), void of any technology, the text on the contrary uses scientific jargon and describes the action as taking place on the technological arena, almost void of humans; the image shows an invisible man, but the text claims invisibility is yet to be achieved; and finally, the image has shady and threatening connotations whereas the text is on an optimistic and excited note (‘invisibility in within reach’), presenting invisibility as something desirable.

These contradictions make it less likely that the potential negative significations of the image, which I have described in length in this essay, are activated or amplified. They are further deactivated in the wider context, the article itself which describes the latest technological achievements in the field of metamaterials; and also by the fact that the hat and coat are drawings – this places them in the fictional world, implying less effect for the real world and by that diminishing the power of the symbol.

This analysis has been rather sketchy but has hopefully shown some possibilities how the symbol of invisibility can be interpreted and the ambiguous meanings that can be created by attempting to visualize the invisible.

But for the end, as promised, I will return to my usual role as a journalist discussing the process leading to the cover being as it is. We, journalists, get usually pretty grumpy when some social scientist starts talking about us constructing meanings or even constructing reality. We usually reject the results of such analyses, claiming: this is not what I thought while writing it, there is no hidden meaning. Often we refer to technical reasons (like limited space or other resources) for doing something they way we did. Of course, deeper analysis reveals that this kind of reasoning to be flawed. Just let me tell you briefly, how this magazine cover was born.

I am also tempted to claim that I had not much choice. How would you visualize the invisible then? I remember going through hundreds of photos from available photo services, looking for an understandable and strong image for invisibility. I found the hat and coat from [iStockphoto.com](https://www.istockphoto.com), a database distributing user-generated images, and it seemed to be the right

symbol from the first moment: simple and powerful. My first concern was that readers should understand from the first glance that the story was about invisibility, so the message had to be clear-cut. The technological discourse does not provide similar easily recognizable signs, their more abstract images (like movement of electromagnetic waves around an object) convey no immediate meaning for the lay reader. The main goal of a magazine cover is to catch an eye, to arouse interest, so the message has to be concise.

The sky was chosen as the background because it provides a good contrast without distracting the attention with additional details. Clouds are less static than clear sky, giving some necessary dynamic to the image.

The contradiction of discourses was at no point an issue. Intertextual references to Wells' invisible man are inadvertent (I had not read the novel then) although the original artist could have been influenced by him. We did use some screenshots from *Hollow Man* as illustrations for the main article, but none of them was powerful enough to be on the cover. I am really glad I found the image I eventually used, there was no other that was as visually powerful and simply understandable.

These both accounts on the magazine cover – semiotic and journalistic – represent different ends of a spectrum. What is probably true is that the semiotic analysis often ignores technological aspects in the construction process, and journalists deny that even the routine choices they make are ideological. But it would require a much longer essay to tackle all these aspects.