

Cruising the Body¹

Dirk Verdicchio

In the following, I present a few aspects of my work on the portrayal of scientific knowledge in documentaries as seen in the context of science-and-technology studies, film studies and cultural sociology. A sequence from a very popular documentary series will provide an example for the discussion of the relationship between cinematic space and translations of scientific visualisations into films.

The sequence I will discuss is taken from *The Human Body*, a television series and also an IMAX-film produced by BBC. The series offers scientific insights into the biological constitution of human beings and its consequences for society. The trajectory of the series covers a wide range: from phylogenesis of homo sapiens to the death of a specimen. The series consists of eight parts. They deal mostly with a certain period of human life, for example childhood or adolescence. Furthermore, there is one part about the brain and another one about the production of the TV series itself. Single episodes introduce certain persons, mostly couples, who are going through specific periods of life. Their situation then is the narrative frame for dealing with the given topic. For example we are introduced to Phillipa and Jeff Watson from Bath trying to conceive a child. Their story represents the starting point for illustrating the troubles of reproductive sexuality and the development of a child in the womb.

The cinematic sophistication of this documentary is remarkable, because it can be seen as paradigmatic for a new way of representing science in film. A typical feature of this type of representation is that it fully utilises the possibilities of film rather than imitating an average boring school lesson. It is strongly influenced by the techniques of narration and the aesthetics we know from fiction films. This way of representing science, this aesthetic, has to do with the way the cinematic space is constructed in this series.

This manner of displaying science forces us to think about the relationship between scientific images and the way these images are popularised. I will develop my presentation in two steps. I will first discuss one sequence in order to discuss two different modalities of constructing cinematic space for the popularisation of science. This will be followed by some observations of the relation of scientific images of the human body and their transposition into this film.

Lots of things can be said about different spatial aspects of film – and very much has been said about this, indeed. For example, about the topological arrangement of spectators, the screen and the projector which has become famous as the ‘apparatus debate’² or on the different visual

presuppositions responsible for the appearance of spacial depth in films³. In order not to bore the reader with lengthy treatises on the fluctuations of the theoretical discourse in film studies, I want to approach this scene with an image Edgar Morin uses in his book *Le Cinéma ou L'Homme Imaginaire* from 1956⁴. Morin describes how the 19th century in its hour of death handed on two new machines which conquered the world in the twentieth century: aircraft and film. Both technologies represent the realisation of the desire to transcend spatio-temporal limitations. The aircraft fulfils the dream of flying and crossing geographical boundaries, and the film is the fulfilment of the wish of having an instrument which promises an objective reflection of the world that transcends subjective preconceptions and the spatio-temporal bondage of the observer. But along with the invention of these technologies, new spaces have also been invented, new boundaries have been set up. Since the arrival of the aircraft we have a complexly structured aerial space through which people, goods, weapons, and so on can be transported. And film has provided us with an imaginary universe in which the visibility of objects can be organised and rearranged by the reconfiguration of time and space. This space is, as I will argue, not bound strictly to camera footage but can assimilate sounds and visualisations produced and recorded in other ways.

The sequence I want to talk about in detail is taken from the sixth part of the television series. The topic of this part is the process of aging. The narrative frame here is a journey that an elderly couple - Bud and Viola - undertake from Kansas to Canada. A stop-over in New York provides the opportunity for explaining how the sense of hearing functions and, in time, diminishes.

The sequence begins with the panning of the camera in a street in New York identifying many sources of noise before it finally reaches Bud and Viola who are obviously suffering from all this noise. Imitating sound waves the camera begins to fly towards Bud and dives into his ear. Inside his ear the camera traces its way along the auditory canal and passes through the eardrum. Here the camera hesitates a moment and allows the viewer a free look into the space of the middle ear that opens up beyond the confining narrowness of the auditory canal. After this stop it moves towards the ossicles which seem to be very big, but which actually are – as the speaker tells us - the smallest bones of the human body. The camera then slides along the stirrus and shows us the spinning cochlea. Zooming into the cochlea it shows us the ‘amplifier system’ with the cells which begin to dance when they are exposed to music.

The description I give here stresses the smooth consistent movement from the noisy street into the inner ear. Taking a closer look we can distinguish the many kinds of images used for this sequence. Long-shots from the streets and different kinds of close-up shots from Bud and

Viola done with a camera. Inside the body we do not have shots in a narrow sense, but different kinds of images produced by medical visualisation technologies like endoscopy, magnetic resonance imaging or electron microscopy. At first thought, it seems to be very counterintuitive to integrate such material into camera movements, because these scientific images appear to be totally different from the images a camera produces. My thesis is that the possibility of such a movement from a street in New York into a man's head is provided by cinematic space. In our case the impression of moving through a continuous space from the street to the inner ear is created by series of film editing techniques which can be described in short as a set of techniques of montage in which the different shots and images are put together in such a way that we perceive the moving images as a more or less continuous stream of time and space. Following Joseph Macelli⁵ in differentiating between continuity cutting and compilation cutting, the given example can be divided in two parts. Each technique creates the impression of spatio-temporal continuity in a distinct way. In the first part of the sequence – the movement from the street to the stirrus - the different shots and images are put together to form a continuous flow of visual images supplemented by sound. Here we speak of continuity cutting. The second part begins with the image of the cochlea. This part is edited like most documentaries and newsreels by compilation cutting. That means that a succession of shots and images are held together by the narration of a speaker. So, in the first case (continuity cutting) the impression of continuity of time and space is primarily generated in terms of a visual space. In the second part (compilation cutting) it is achieved by an auditive space.⁶

The visual space created by continuity cutting can be regarded as an element which is significantly different from classical documentaries as Mascelli characterizes them. But even in the second part, where compilation cutting was used, the producers seem to want to distance the film from ordinary documentaries. Using stop frame animation - a technique deriving from the production of animated cartoons - to make the cochlea turn or using a series of alternating images to backup the dancing cell. These alternating images set to the rhythm of Bill Halley's song supports the interpretation of the dominance of the auditive space in this part and reveals the creative rearrangement of the scientific images.

We can only guess about the reasons for this change in the way documentaries are visually narrated. Surely it is challenging to represent scientific issues in a more interesting - and as Siegfried Kracauer would say – a more cinematic mode instead of choosing a traditional way of portraying these same issues. Another reason is certainly that an economic market for interesting documentaries on scientific issues has evolved – undoubtedly the most obvious indication that public understanding of science efforts are bearing fruits.

The techniques of film editing make it possible to integrate images of multiple kinds into a space, which we perceive as continuous, even when these images do not derive from a camera, but from scientific imaging technologies. Integrated into the cinematic space the context of these images changes. Although the images of the inner ear are produced by technologies used in medicine, and they can be identified as medical images, their scientific meaning changes. They undergo an alteration without being changed. By being introduced into a cinematic space they are subjected to another order of things. In the context of medicine the images from endoscopy, MRI or electron microscopy are discrete units with each image correlating only to the technique from whence it came. Here, there are no transitions from one to the other. Endoscopical images can be seen by the eye or 'live' on a screen, MRI images are results of complicated technical translations and arrangements and electron microscopy can only be used with non-living and carefully prepared material. All of these technologies produce images of body fragments on various levels. In order to make any scientific or medical sense they have to be interpreted in relation to other data of a specific person. When being integrated into the cinematic space, the fragmented images are put together - certainly not to a real body, but to a generalised and imaginary body. The narration of the sequence may imply that the visually penetrated body belongs to a certain person - in this case Bud. But the context provided by the speaker and the aim of the series imply that the audience is given an insight into the human body that is of universal validity. Bud functions as a 'generalised other', allowing us to see ourselves from the position of someone else. According to George Herbert Mead, such a position is needed to create identity⁷. By transcending the boundaries and incommensurabilities of medical technologies the highly specific images become tools for a popular knowledge of the overall biological constitution of humans in general fitted into the aesthetics of television and computer games.

Bruno Latour has described scientific representations as 'immutable mobiles'⁸. Their great advantage is their 'optical consistency', combined with their ability to circulate among different groups and media. The scientific images of the inner ear in the discussed sequence are such representations. They are immutable in terms of their optical consistency, but their mobilisation into the cinematic space opens them up for recombination, reinterpretation and resignification. What happens during the production of a cinematic move from a street into a body is a kind of spatial ordering, a reconfiguration of the relations between the inside and the outside as perceived in everyday life, but also in science. A spatial ordering that alters the characteristics of the images and creates a specific kind of knowledge.

Edgar Morin has related the development of cinematic technology to the need of the laboratory to decompose movement and to reproduce the visible. After having discussed this sequence I hope it has become obvious that this desire was satisfied by the invention of a space in which the visibility of objects can be captured and reconfigured spatio-temporally.

Notes

¹ This text is a slightly changed version of my presentation at the *Transforming Spaces* conference in Darmstadt. It would be helpful to see the film sequence I'm talking about but for obvious reasons this is not possible here. A longer and more elaborated version of this text will be published elsewhere. I will announce it here where you can find it.

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² See for example Baudry 1992, Heath 1981, Winkler 1992, Paech 1997.

³ See Winkler 1992.

⁴ Morin 1958.

⁵ Mascelli 1965.

⁶ See Beller 2000, Mascelli 1965.

⁷ See Mead 1967, p. 152 ff.

⁸ Latour 1990.

References

- Baudry, Louis (1992 [1975]), „Ideologische Effekte erzeugt vom Basisapparat.“ In: *Eikon. Internationale Zeitschrift für Photographie und Medienkunst* 5, pp. 36-43
- BBC (1997), *The Human Body. Part 6: As times goes by*. Produced by John Groom.
- Beller, Hans (2000), „Filmräume als Freiräume. Über den Spielraum der Filmmontage.“ In: Hans Beller, Martin Emele and Michael Schuster, eds., *Onscreen / Offscreen. Grenzen, Übergänge und Wandel des filmischen Raumes*. Stuttgart: Hantje Cantz Verlag, pp. 11-49.
- Heath, Stephen (1981), *Questions of Cinema*. Bloomington: Indiana University Press
- Kracauer, Siegfried (1997 [1960]), *Theory of Film. The Redemption of Physical Reality*, Princeton (NJ): Princeton University Press.
- Latour, Bruno (1990), „Drawing things together.“ In: Michael Lynch and Stephen Woolgar, eds., *Representation in Scientific Practice*. Cambridge (Mass.): MIT Press, pp. 19-68.
- Mascelli, Joseph. C. (1965), *The Five C's of Cinematography. Motion Picture Techniques Simplified*. Hollywood: Cine/Grafic Publications.
- Mead, George Herbert (1967 [1932]), *Mind, Self & Society*, Chicago, London: University of Chicago Press.

Mikael Hård, Andreas Lösch, Dirk Verdicchio (ed.) (2003): Transforming Spaces. The Topological Turn in Technology Studies. (<http://www.ifs.tu-darmstadt.de/gradkoll/Publikationen/transformingspaces.html>)

Morin, Edgar (1958 [1956]), *Der Mensch und das Kino. Eine anthropologische Untersuchung*. Stuttgart: Ernst Klett Verlag.

Paech, Joachim(1997), „Überlegungen zum Dispositiv als Theorie medialer Topik.“ In: *Medienwissenschaft* 4, pp. 400-420.

Winkler, Hartmut (1992), *Der filmische Raum und sein Zuschauer. 'Apparatus' - 'Semantik' - 'Ideology'*. Heidelberg: Carl Winter Universitätsverlag.