Katherine CHANDLER, "Tele-scribing the 'Enemy:' Knowns and Unknowns through Television Targeting"

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Nadav Even CHOREV, "Information Technologies in Personalized Medicine as Assemblages of Risk?"

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Nicolas DELFORGE, "'Nanopatents': A Laboratory for Designing an Ontology and Epistemology of Technoscientific Objects"

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Max GAWLICH, "The device of Electroconvulsive Therapy as Technoscientific Object"

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Fabien GRÉGIS, "The International System of Units as an illustration of the social, epistemic and practical values of metrology"

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Jérémy GROSMAN, "Research in Computing Science. A Case-study: Ant Colony Optimization Algorithms"

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Mathias GROTE, "Rhodopsins from biochemical substance to neuroscience tool, or: In what sense have proteins become technological objects?"

Optogenetics, a buzzword of today's life sciences, refers to the genetic targeting of neurons by light-activated membrane proteins such as rhodopsins. This allows to control neuronal action potentials, and ultimately animal behaviour, by optical technologies. Thus, optogenetics has not only shaped novel interfaces between organisms and laboratory instruments, but it also epitomizes an intertwined mode of analyzing and acting upon life on the molecular level. Thus, rhodopsins have developed from objects studied in the context of bioenergetics and sensory physiology (rhodopsin is the visual pigment found in animal retinae) to "intraorganismic tools".

Against the background of optogenetics, I will analyze the history of rhodopsin research from late 19 th century visual physiology to biochemistry and biophysics a century later. My leading question will be if and in what sense we can describe the trajectory of rhodopsin research as a development leading from understanding towards use, and how the domains of science and technology have become intertwined here.

Various developments need to be taken into account to answer this question, such as the disposability of certain rhodopsins as material substances that lent themselves for experimentation, the rise of the concept of rhodopsins as "molecular pumps", "channels" or "signal transducers", or their controlled production, modification and transfer between different organisms by genetic engineering. I will also analyze the different environments in which rhodopsins have become increasingly technical objects – from the literal environments, such as cells, biochemical assays or the dry world of opto-electronic technology, to the broader climate in which the molecular life sciences have developed. Here, the rise of molecular biotechnologies and the integration of different strands of the molecular life sciences since the 1980s need to be mentioned. It is interesting to note that many small steps have been taken towards rhodopsins as molecular technologies, not all of which have been successful. The recent rise of optogenetics can probably be considered as a landmark in this oscillation between science and technology.

I will also try to understand the history of rhodopsin research against the background of technological uses of proteins in the 20 th century. Throughout the history of bio-chemical technologies (from fermentation to recombinant

DNA), varying uses have been made of proteins produced from microbes, plants or animals. Thus, I will examine the relationship of science and technology from early examples such as the production of enzymes or hormones to recent strategies such as optogenetics, in which the organism itself becomes both object and subject of technological processes.

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Verena HALSMAYER, “Solow’s Model of Economic Growth as a ‘Technical Object’”

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Michael HEIDT, “Material Knowledge in Informatics Practice”

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Shing-ting LIN, “The Forceps and the Hands: The Making of Gynecol-Obstetrical Knowledge in China, 1930s-1950s”

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Sarvnaz LOTFI, “Accounting for drug prices in terms of additional knowledge”

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Mina LUNZER, “Sleep and the moving image”

One of the greatest problems within the objectification of dreaming in science by using the camera as an instrument, can be easily described as “filming a dreamer, showing a sleeper”. However, since the invention of the camera, film technology has been used extensively to describe and analyse *both* phenomena, sleep and dream: Be it in the sleep laboratories by the observation of the body’s movements, or in neuroscientific labs that defined what dreaming actually „is“ – by referring to it’s filmic representations. Once mental states were described in accordance to sleep phases, it appears that sleep and dream finally came together in one image. Can a filmic setup be called technoscientific? How can we determine the technoscientific aspect about the camera as audiovisual apparatus or timebased media? Can the setup of these productions be compared to experimental systems? What could appear inside these setups, why and when?

I will propose an answer to some of these questions by referring to unpublished material conducted through my historical research (personal interviews and texts). The focus here is on a very critical discussion amongst the Italian filmmakers Pier Paolo Pasolini, Federico Fellini and Vittorio de Seta in the 1960’s on the relations between the camera apparatus, dreaming and autobiography.

Image taken from our own footage (2009)

Since 2009 the production of the film has been supported by small to medium arts foundations. It is planned as a feature length documentary.

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Angie MEJIA, “Major Depressive Disorder and its discursive technoscientific manifestations in our everyday world”

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Ji-ho MOON, “Epistemology and Politics of Restoring a Forgotten Technique: The Case of Goryeo Celadon”

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Hilary C. ROBINSON, “Sociotechnical Linkages between Beat Policing and Forensic DNA Databases in Twenty-First Century Crime Control”

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Minwoo SEO, “Embeddedness of Know-That in Know-How: An Episodic History of Atoms as Scientific and Technoscientific Objects”

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Mauro TURRINI, “On-line Genomes between Personalized, Preventative and Participatory Medicine: A Biopolitical and Biosocial Analysis of Direct-to-Consumers Genetic Testing”

My object of research is a new generation of genetic tests, known as *direct-to-consumer genetic testing* (DCGT), that I understand as the frontiers of personalized, preventative and participatory medicine associated with the dissemination of health-related genomic information. DCGT use has increased rapidly in the past five years due to the drastic reduction in DNA sequencing cost and time. This has made genetic tests economically affordable, costing only a few hundreds Euros on the Internet. The consumer usually takes the biological sample with great ease at home with a special DNA testing kit, and then sends it to the laboratory, which communicates its results over the phone, by post, or, most frequently, by email. Merging the steady progress in the molecular genetics with the extensive diffusion of information technologies (IT), DCGT has marked a rupture in the field of clinical genetics, by bringing huge amounts of health-related genomic data in a digital format into society. This situation has massively expanded the category of people who will have genetic tests and has offered innovative services and information.

Clinical genetic diagnosis was once restricted to people who were considered “at risk”, and was conducted within specialized clinical centres at the prerogative of the medical professionals. Instead, the DCGT industry (which includes long-established laboratories and biomedical companies and new start-ups and university spin-offs) provides their services directly to consumers by circumventing formalized institutional patterns. As opposed to traditional genetic tests, which serve a small part of population (notwithstanding the increase of genetic diseases detectable of the last two decades), DCGT has been spreading very rapidly. Furthermore, the popularization of genetic testing goes hand in hand with the innovation of the offered services themselves.

These tests capitalize the increasingly perceived importance of both genome and Internet, which is the medium through which it possible not only to have, but even to share genomic data. A growing number of different kinds of web spaces (mainly websites, blogs, and social networks) aimed at allowing DCGT users to access, manage, and share some of their genomic profile (or even the whole one), discuss it in relation with their clinical meanings, and engage in biomedical research as passive or active experimental subjects. The relationship between informatics technologies and genomics make DCGT a promising frontier of a new more participative and open way of doing science. At the same time, they buy into a privatized model of healthcare grounded on personal assessment of risk and the imperative of healthiness.

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Brigitte VAN TIGGELEN, “A biography of Prussian blue as a technoscientific object”

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Rafał WODZISZ, “Knowledge about the values important for technoscience. Case study of R-1234yf refrigerant”

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David ZAREBSKI, “Formal ontologies, Data engineering and Descriptive metaphysics”

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