

The eugenic and human enhancement narratives

When the Chinese scientist He Jiankui declared in 2018 that he changed the hereditary material of babies in such a way as to make it resistant to HIV he was labeled as China's Dr. Frankenstein and shortly after sentenced to three years in prison and a steep fine. The labeling as Frankenstein does not refer to the famous literary figure of the early 19th century by accident. It stands for a repeatedly recurring theme since antiquity: the artificially created human being. Part of this is the fundamental ambivalence towards this dream of mankind. This is signaled by the subtitle of Mary Shelley's *Frankenstein: 'The modern Prometheus'*, which points to the version of a Greek mythology in which Prometheus has created a human being from clay. The ambivalence is not only caused by the presumptuousness implied in surpassing the act of creation but by the loss of control over the artificial creature. The defectiveness of the copy, the loss of control and the forced destruction are the accompanying themes. These few hints provide the background for the positioning of the historical and societal relevance of the CRISPR-CAS9 technology. It is not just any technology such as a new smartphone. It is the ultimate technology that opens the door to human enhancement.

The following are some conclusions of the very preliminary state of a project that tries to reconstruct the narrative(s) on eugenics and human enhancement across media: from science (see timeline) to newspapers to novels and movies. (The results from the sub-project on the narrative in film are in preparation). (Project members: P. Weingart, D. Chartrand, P. Hamann, L. Hernandez). The time line (1) determined the selection of articles from the *Manchester Guardian* (2) for the years 1908 – 1998. (The completion of the selection until 2012, the discovery of CRISPR-CAS9, is in progress). For the reconstruction of the narrative we have selected articles that indicate some connection to 'human enhancement' (for this workshop leaving out parallel references to critical arguments, mostly ethical). This is followed by a brief overview of the narrative in literary fiction (3). Finally, a first attempt at describing what is assumed to be the parallel narratives of negative and positive eugenics/human enhancement from the vantage point of the CRISPR-CAS9 discovery.

The modern history of the human enhancement narrative begins in the 19th century. 1865 Gregor Mendel published the results of his pea experiments and formulated the 'laws' bearing his name. For a time they are forgotten to be 'rediscovered' in 1900 by botanists Correns, de Vries and von Tschermak-Seysenegg. Already prior to that, motivated by Darwin's theory of evolution, the discussion of the degeneration of the population had begun which by the early 1890's began to become scientific. 1892 Weismann's theory of heredity appeared which dramatized the problem of degeneration and supported the eugenic thesis that only natural selection advances evolution. Since that time, at the latest, two narratives evolved in parallel: that of the so called negative eugenics focused on the elimination of hereditary diseases, and the narrative of positive eugenics oriented to the 'breeding' of a 'higher' or improved human race which has found its successor in the discourse on

'human enhancement'. Negative eugenics with its focus on the control of human procreation (i.a. the interdiction of marriage between the mentally retarded) was dominant in the scientific discourse approximately between 1900 and 1945.

The history of literary representations of eugenics and human enhancement reflects the duality and ambivalence of narratives. Occasionally, especially during the high times of eugenic thinking at the end of nineteenth century and the beginning of the twentieth century, there has been a tendency in literary writing to describe quite favourably the prospect or the need, even, to artificially dictate human evolution. More frequently, however, human enhancement has received a more sceptical treatment in literature, ranging from complex and ambivalent negotiations of new thinking about heredity and its impact on culture and society, to explicit condemnations of eugenicist practices.

Thomas Hardy's *Jude the Obscure* (1895) reflects Hardy's familiarity with August Weismann's theory of the germ plasm, which fuelled the position of contemporary eugenicists claiming that inherited dispositions could not be remedied by environmental factors.

Hardy's ambivalence towards human heredity and improvement finds a much more pronounced expression in the 1920s. . G. K. Chesterton's public criticism of eugenics, for instance, sparks parliamentary debates, while J. B. S. Haldane's speculative *Daedalus* (1924) imagines a future in which genetic engineering enables new levels of positive eugenics. In the wake of increasing resistance against eugenic ideas, Aldous Huxley's 1932 dystopian novel *Brave New World* epitomises the cultural fears of human enhancement (through positive eugenics) at the time.

However, a growing discourse on genetic human improvement produces literary fictions, like Robert Heinlein's 1942 *Beyond this Horizon*, which embrace the promise of positive eugenics. Generally, the possibilities of positive rather than negative eugenics appear to dominate literary negotiations.

Eugenics was primarily established in the Anglo-Saxon and Scandinavian countries. In Germany the medically motivated eugenic narrative was confounded with the race-hygienic narrative. The latter, in the guise of breeding schemes and visions of a Germanic blonde master-race was even put into practice rudimentarily (Lebensborn). "The Marching Morons" (1951) by Cyril M. Kornbluth, draws on and moderately condemns Third Reich strategies of negative eugenics through the elimination of parts of the population that have been deemed undesirable by the ruling elites.

The Geneticists' Manifesto of 1939, like the UNESCO Declarations on Race of 1950 and 1952 show that the international community of geneticists tried to mediate between the moral ostracization of the NS-race policy on the one hand and the promise of a public health policy resting on the progress of genetics. Their ambivalence has come to a head by the transition from the previous selectionist social technology to the molecular-biological 'genetic fix' signaled by the

concept of 'genetic engineering'. The development of the recombinant DNA technology 1972 opened the perspective of a direct intervention into the genetic material. With that groundbreaking development the ethical concerns towards the new technology became more intense. 1983 the American President's Commission on the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research mandated a ban on all active eugenics. Human genetics from now on was limited to a passive (non-directive) advisory function.

Practices of positive eugenics continue to find expression in the second half of the twentieth century, for instance in the short story, later turned novel, *Ender's Game* by Orson Scott Card (1977/1985).

The eugenic legacy of genetic science has been forcefully explored in literary fictions of the 1990s. In Simon Mawer's *Mendel's Dwarf* (1997), for example, the geneticist-protagonist directly links new genetic screening technologies to historical eugenics, including the eugenic atrocities committed by the Third Reich.

The cloning of Dolly happened in 1997 while the Human Genome Project was already well under way (1990 – 2003). HGP was terminated in 2003 after the full decoding of the human genome had been accomplished. The development of the CRISP-CAS9 technology is the preliminary endpoint of this development.

In the early twenty-first century, eugenic thinking continues to be explored in literature. In Margaret Atwood's *MaddAddam* trilogy (2003-2013), for instance, eugenic practices are connected with ecological concerns, reflecting both the magnified visibility of genetic science at the turn of the millennium, especially through the Human Genome Project, as well as of ecological issues surrounding anthropocentric climate change.

He Jiankui's experiment triggered international protests and prompted the WHO to create a global register of all research projects on 'human genome editing'. The Director-General of the WHO also demanded to stop all research until all technical and ethical implications had been orderly considered, this before the background that the "new genome editing technologies hold great promise and hope for those who suffer from diseases we once thought were untreatable. But they also pose unique ethical, social, regulatory and technical challenges"

In view of the developments of the rDNA technology and the accompanying possibilities but also the ethical problems molecular biologists in 1975 had called a conference of 140 scientists (mostly biologists) in Asilomar in order to establish guidelines for the regulation of experiments including the ban or moratorium of experiments. Since by that time the scientists had to expect a sensitive public they tried to forestall their concerns by being transparent and inclusive. In March of 2015, before the background of CRISPR-CAS9, some of the former participants of the Asilomar-conference sought to adapt the model to the new situation. Again, they suggested a global

moratorium to analyze the ethical, legal and societal implications of 'gene-editing'. But the scientists wanted to retain the right „to push research to its limits“ for themselves.

The paradox is evident: to the degree that the possibilities of an effective intervention into the human genotype have been increased the narrative of enhancement has been contained by ethical concerns. Whenever progress in molecular biology leads closer to the prospect of a positive/active eugenics or a demand-oriented eugenics the narrative is pushed back and the ethically more unobjectionable medically focused narrative is given more weight. But two things are to be considered. On the one hand the dividing line between ethically unproblematic medical indications (hereditary diseases) and ethically more questionable optimizations which have dramatic societal implications becomes increasingly diffuse. On the other hand, with this the suitable forms of a participation of the public and an adequate control executed by it become ever more important but also more fragile.