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**CREATING HUMANS – ETHICS OF SCIENTIFIC PROGRESS:
FRANKENSTEIN AND HEART OF A DOG**

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Abstract

Technical progress has often led us to ethical considerations, including the situations when technical development can go too far. Literature has long taken the deepest interest in natural sciences, at some points with reference to recent or future inventions, sometimes by far extending the technical possibilities of their time. One of the most popular technical mind plays has been the creation of the artificial human, the so called homunculus – both in science and literature. This work looks at Mary Shelley's Frankenstein and Michail Bulgakov's Heart of a Dog in terms of how each of them, respectively, reflects ethical concerns connected to the process of making a man, questioning motivation and responsibility of the scientist, and consequences for both a creator and a creature.

Two literary examples are both mystical and alchemical elements, as well as the inclusion of actual natural science practices. Clear ethical concerns are expressed in both examples, and at different levels. Scientist are individuals who are eager to make scientific progress, transcend their competences and therefore, have to reckon dramatic interventions in the life. The main failure is a lack of responsibility for the creature they create.

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1. Introduction

In time of progress, which provides us with ever-shorter distances with robots, microchips, and medical innovations, the question has always been discussed whether technical development can go too far. Ethical questions towards science are already as old as the development of science itself. This has also been taken up by literature repeatedly and processed in different ways.



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One of the most popular topics that has fascinated scientists and literati alike is certainly the creation of artificial man, also known as homunculus. The homunculus-theory, i.e. the (formerly alchemical) theory on how to create an artificial man, today still serves as an example of how ambivalent technology can be. Already known since antiquity and the Middle Ages, it often appears in the context of alchemical works. However, since the European modern era, it increasingly reflects the progress of the technological and philosophical development (Drux, 2001).

For this reason, it seems worthwhile to examine in this paper the homunculus phenomenon in literature, as an accompaniment to scientific development and as a contribution to the ethical discussion about this development. Michail Bulgakov's "*Heart of a Dog*" (1990), and Mary Wollstonecraft Shelley's "*Frankenstein*" (2016) are particularly prominent literature examples when it comes to the homunculus theme. Although both of them were written more than a hundred years apart, they both profitably show the experiences of scientists. The paper discusses the thesis that both *Heart of a Dog* and *Frankenstein* rate the ethical decision of creating an artificial human critically and discuss ethics in terms of motivation for, responsibility and consequences of technical research. This can provide a valuable contribution to the ethical discussion on this question in reality, especially because the imagination of the authors knows no technical or medical boundaries.

2. Methods

2.1. Brief history of human machines and Humunculi

Already in Cicero, Apuleius, and Plautus, and other antique writers, the term *homunculus* (Handwörterbuch des deutschen Aberglaubens: 1987) is found in the original meaning as the diminutive to homo - literally as a human being. In the Middle Ages, it changed to the one of the chemically produced miniature men ("Homunculus," 4 Hieb- und stichfest – Knistern).

2.2. Humans as creators of humankind

Since the beginning of human culture, there have always been attempts to replicate the human organism and its abilities (Drux, 2001). Already long before the alchemistic attempts of medieval times to create life, the Attic master Diadalus is well known for building statues that are moving (Drux, 2001). No later than the Enlightenment, "machines of all kinds" became popular (Walther, 2009) – an answer to a then emerging world view that saw humans as soulless automatisms which exclusively obey the laws of physics and mechanics. The French anatomist, physician and philosopher Julien Offray de la Mettrie deals with precisely this approach in his work *L'homme machine*¹ (1748). This meant a powerful contrast to the Cartesian dualism which has been accepted so far, according to which human beings incorporated both a body machine ("res extensa") and a soul of godly descend ("res cogitans") (Drux, 2001).

According to Rudolf Drux, de la Mettrie was not able to foresee the socioeconomic consequences resulting from the construction of human machines – the fact that machines would increasingly replace humans, for example in textile production. In his opinion, the principle of higher mechanics first entered the society with the steam engine, to which later the heat and electricity were added (Drux, 2001).

¹ (germ. – *Machine Man* or *The Human Machine*).

2.3. Writing about the Homunculus

The development of the homunculus figure in the literature is, again, placed in its mystical-alchemical background. However, with the advances of the modern age, the scientific knowledge of each author's time was increasingly taken up. While the homunculus creation in Goethe's *Faust* (Montiel: 2013) still clearly incorporates mystical elements, more and more authors actually took existing inventions as an opportunity to imagine the creation of a human.

For instance, in Jules Verne's novel, *Carpathian Castle* of 1892, a dead singer who died in the middle of the concert could apparently be revived to end it, with the aid of electricity, more precisely - a projection and a phonogram. However, even in an imaginary world, such creations still triggered discomfort: this truly interesting (thought) experiment was allowed to exist only for purposes of temporary entertainment. Through the creation of a human being, man enters into an area which is not considered as his own and which, according to religious convictions, transcends his boundaries.

Today one can probably find a greater tolerance in the literature for scientists and homunculi. This may be traced back to an already existing similarity between human beings and machines: i.e. in processors that handle high-complex computing capacity and independently utilize it for a learning process (Drux, 2001).

Thus, the importance of literature for science derives from its active contribution to the moral debate, it constantly recalling the ethical process of the new technical-medical developments, and, in part, anticipating it. Robert Hamerling, in his satirical epic *Homunculus*, already in 1888 describes a surrogate mother, who carries out a homunculus that is the experiment of a professor (Hamerling, 1889) – at that time still a technical thought-play. His concerns about connected ethical problems (in this case, however, with the end product) seem to multifacetedly find themselves today in a different form. Most emerging technologies that interfere in human biology face fears of the public and scientific community, and raise worries about its application – for example in nanotechnology (Godymchuk et al: 2015)

Through the possibility to produce embryos artificially, man has become both the starting and the end product, and may become the center of another production process. This is what the cultural anthropologist Günther Anders described as a further "industrial revolution" (Anders, 1980) in the context of reproductive medicine practice and advances in genetic engineering (Drux, 2001). In this sense, man would also become a resource, which would have to dryly include himself in the already existing discussions on the handling of raw materials - materialistic concerns would play an important role. Thus, literature is not only used to further develop the use of up-to-date technical innovations, but also to criticize them.

Today, the treatment of the homunculus figure is seen in the literature as a cultural-historical prelude to the medical and technical developments. Another question related to the ethics of human creation is portrayed in the novel by the Dutch writer Harry Mulisch: *The Procedure* (1989). In it, the chemist Viktor Werker is shown producing primitive life in his laboratory of inorganic starting material. Nevertheless, he is psychically not able to attend the birth of the fetus of his daughter, who died in the mother's body, and he realizes that he flees when death is the matter (Mulisch, 1999). As such, here the research direction of the scientist can be seen as a way of fleeing death. The creation of artificial life thus establishes a relation to the creation of eternal life, which man strives for since the dawn of time. All in all, one could conclude that the creation of man is such an exciting subject for us, since it could also provide an answer to the

question of immortality.

3. Results

3.1. Ethics of Creation in *Frankenstein* and *Heart of a Dog*

Many of the ethical concerns already mentioned above can be recreated both in *Frankenstein* and in *Heart of a Dog*, although both novels have been written more than a hundred years apart. For a better understanding, the contents of both novels are briefly summarized in the following, in order to provide a basis for the discussion of the motives of the scientist, their handling of responsibility, and the consequences of the creation for scientist, Homunculus and society.

Mary Wollstonecraft Shelley's *Frankenstein* was published as a horror novel in 1818 and warns of unbridled research: the Englishman Robert Walton is an ambitious researcher who leads an expedition to the North Pole in search of insights. On the way, he and his crew meet a highly intelligent, but completely exhausted man on the ice, and take him on their ship. He introduces himself as Viktor Frankenstein. When he learns of the young man's enthusiasm, he tells his story to the latter, in order to warn him of the consequences of his ambition. Also possessed by scholarly ambition, as a young man he succeeded in discovering the secret of life, and he created a man. Shocked by the latter's horrific appearance, he flees from the monster and leaves it to himself. Some time later, the monster murders his brother - an innocent housekeeper is accused. Viktor chases after the monster, meets him and is told about his story. Because of the monster's wild appearance, it is exclusively attacked and condemned by people. However, he asserts his benign nature and asks Frankenstein for the creation of a companion. However, because of moral concerns Frankenstein does not do this, whereupon the monster in revenge murders Frankenstein's friend and wife, which in turn leads to the death of Frankenstein's father. Frankenstein pursues the monster until he is exhausted, and, on Walton's ship succumbs to his exhaustion. In the same night, the monster comes to mourn for its creator and tells Walton that it has only one thing to do - to burn itself on an ice floe.

Michail Bulgakov's story *Heart of a Dog*, in turn, plays in a completely different context, namely in the background of the satirical portrayal of Soviet everyday life. The dog Sharik (Russian for "little ball" - a typical dog name) is taken in by the medical professor Preobrazhensky. The dog, who is convinced that rosy times have now begun, is implanted the testicles and a part of the brain of a small-time crook by the professor, as Preobrazhensky hopes to gain insights into rejuvenation. However, the dog unexpectedly develops into a human being, who quickly shows the lower character traits of the organ donor, and, in addition - very unpleasant to the professor - ties up contacts with the communists of the house. At this point, the professor begins to doubt his experiment and discusses this matter with his assistant Dr. Bormenthal, who wants to kill the humanized animal. However, the professor does not allow this. But after the previous dog denounces its creator as a counterrevolutionary, the latter is at an end with his patience. When, after ten days, militia officers intrude in Preobrazhensky's apartment to investigate after the allegedly murdered comrade, they only meet a dog who loses more and more of his human traits. Although he is suffering from a headache, Sharik is very pleased with his situation and admires the professor - only his obstinate research still seems uncanny to him.

3.2. The urge of research

At first glance, the two works have many similarities. In the question of the motivation behind the experiment, the two scientists are very much alike:

When the Professor meets Sharik, he has been waiting for a test object like this dog, and the project is planned longer, so Sharik is "just what [he] need[s]" (Bulgakov, 1990). Possibly, attempts have already been made. The scientist thus uses the chance which leads the dog across his path. While Preobrazhensky conducts the experiment, he is filled with joy, his "eyes shining" - obviously, he does not expect that his experiment could turn against him. He also has only limited ethical concerns, does not feel guilty or compassionate towards the laboratory animal which he is operating against its knowledge and whose death the Professor considers probable. The central motive for the intervention is "to explore the acceptability of hypophysis transplant and its potential for the rejuvenation of the human organism" (Bulgakov, 1990), since he himself has already achieved success in this field and wants to make further progress. On the way to rejuvenation, and thus potentially immortality, this experiment unfortunately does not bring any more knowledge, but on the other hand bears another significant discovery.

Likewise, in the case of Frankenstein, his primary impetus is the drive for research, to which he does not wish to set any (moral) limits:

Whence, I often asked myself, did the principle of life proceed? It was a bold question, and one which has ever been considered as a mystery; yet with how many things are we upon the brink of becoming acquainted, if cowardice or carelessness did not restrain our inquiries. (Wollstonecraft Shelley)

Especially he is driven by the ambition to occupy a truly unique and godlike role for the new species:

A new species would bless me as its creator and source; many happy and excellent natures would owe their being to me. [...] Pursuing these reflections, I thought that if I could bestow animation upon lifeless matter, I might in process of time [...] renew life where death had apparently devoted the body to corruption. (Wollstonecraft Shelley)

As can be seen, therefore, Frankenstein sees the creation of a human being as a station that he can reach on the way to eternal life. He and Preobrazhensky are thus on the same path before creating the homunculus.

3.3. Taking responsibility and consequences

However, right after the creation of each creature, each of them passes on differently: Frankenstein is not able to coolly deal with his fears of the monster's outer appearance, and escapes his responsibility by fleeing from the scene: "Mingled with this horror, I felt the bitterness of disappointment; dreams that had been my food and pleasant rest for so long a space were now become a hell to me; and the change was so rapid, the overthrow so complete" (Wollstonecraft Shelley). Since Frankenstein is not able to give the monster an appealing appearance ("His limbs were in proportion, and I had selected his features as beautiful. Beautiful! Great God! His yellow skin scarcely covered the work of muscles [...]") (Wollstonecraft Shelley), he is also indirectly responsible for his social failure. This action is ethically unjustifiable, since it marks the beginning of the neglect of the monster, which ultimately leads to its moral decay, and the death of innocents.

His first serious confrontation with the question of doing the ethically right takes place only when he rethinks the creation of a second creature and rejects it because of reservations. "As I sat, a train of

reflection occurred to me that led me to consider the effects of what I was doing "(Wollstonecraft Shelley). Although he has learned from previous experiences, this discovery of ethics is too late for him and only aggravates his situation.

For Frankenstein the negative consequences already occur during the creative process - his health is severely impaired, he "seemed to have lost all soul or sensation for this one pursuit" (Wollstonecraft Shelley). However, this situation is dramatically worsened by his above-mentioned unethical decisions and a lack of sense of responsibility, and ultimately leads to his death. Shortly before his death, he still reflects this situation:

In a fit of enthusiastic madness I created a rational creature and was bound towards him to assure, as far as was in my power, his happiness and well-being. This was my duty, but there was another still paramount to that. My duties towards the beings of my own species had greater claims to my attention because they included a greater proportion of happiness or misery. (Wollstonecraft Shelley)

Thus, before his death, Frankenstein once again emphasized his responsibilities. He did not fulfill the first responsibility, the second only partly. Thus the creation of a homunculus here has far more dramatic consequences for the scientist than in Bulgakov.

For the homunculus, the situation on the other hand is much more serious than in Bulgakov's work. The consequence of its creation is a life in rejection by society and in complete solitude. For the society, the creation of the homunculus has comparatively few consequences, since the latter usually hides himself, and with few exceptions, no encounter arises. The consequences for these exceptions, on the other hand, are dramatic - they end with shock or death. Thus, the creation of the homunculus in Shelley's work, apart from the scientific progress, contains only disadvantages for all involved, above all for the scientist.

The situation is different in Bulgakov's narrative, but with a similar outcome. Although the scientists are trying to take responsibility for their creation by wanting to teach it the behavior of the upper classes, the latter is still beyond the control of the scientists through its independent action. In this respect, there continues to be a conflict of interest between professor, who wants to keep his authority as a creator also in the further development, and the Homunculus, which expects compensation for the involuntary abuse in the operation in the form of special attention and freedom: "Did I ask to have that operation?" The man's voice rose to an indignant bark. "A fine business! They go and grab hold of an animal, slit his head open with a knife, and then they can't face up to the result. Perhaps I didn't give my permission for the operation." (Bulgakov:1990)

In the course of the narrative, however, there is a small shift in authority towards the Homunculus, which gets more and more independent, and also acts against the will of the professor. Under this situation, the health situation of the latter is becoming increasingly worse. So, it can be said that the consequences, especially for the scientist, are exclusively negative - he is "completely exhausted, so that [he] can no longer work" (Bulgakov, 1990). Nor can he enjoy the fruits of his work, since he is denied the recognition of his work. He has to conceal his results because he has to fear persecution otherwise. In this case, the reason for the negative consequences for the scientist is also the unforeseen development due to a lack of preparation and reflection, and the fact that society is not yet ready for the discovery. For the homunculus, the existence is more positive than for Frankenstein's creature, since he can fit into society. Nevertheless, he is suffering from a non-acceptance by the people around the professor. After his

operation back into a dog, however, he feels completely satisfied and apparently better than in his role as a human being.

4. Conclusion

The creation of a homunculus does not work successfully in either of the two cases. Although this discovery is regarded as a technical and scientific innovation with immense importance, it has serious consequences for the scientist, the society and the homunculus. The scientist was driven by a great scientific ambition in both cases. Due to the lack of ethical reflection at the beginning of his experiment, it could happen that he did not consider the consequences of his actions and sacrificed them to scientific progress.

The researchers deal differently with the new creature - while Preobrazhensky plays an educational role for the homunculus, Frankenstein denies this role. Both scientists sacrifice the happiness of their charge to their own without hesitation. Even at the beginning of the experiment, the scientist is uncertain in which direction all will develop and he loses control. The consequences for the scientist are health deterioration or death, for the homunculus, it is the lack of social acceptance and rejection by the scientist and resulting mental conflicts. Society is denied the important scientific discovery in both cases.

The two literary examples are very well integrated into the previously described tradition of the homunculus representations in the literature. There are both mystical and alchemical elements, as well as the inclusion of actual natural science practices. Clear ethical concerns are expressed in both examples, and at different levels. The scientist is portrayed as an individual who, eager for scientific process, transcends his competences and therefore has to reckon dramatic interventions in his life. The main reasons for the failure are a lack of responsibility for the creature, or a lack of prior discussion of the consequences of scientific activity. Both books allow for the assumption that the question of immortality lay behind the research.

As ethical concerns for creating new life with an own consciousness become stronger, future research will have to look on scientific progress which is yet to come. Researchers in the field of artificial intelligence will have to face society's fears about uncontrollable automatons, like homunculi, or human clones, which could have dramatic consequences for all humanity.

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