

HUMAN GENETICS AND THE STATEMENT OF UNNATURALNESS

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Abstract: As shown by Eurobarometers of years 1999 and 2002, human genetics raises debates concerning its naturalness and unnaturalness. According to the so-called statement of unnaturalness, practices and/or outcomes of human genetics are unnatural and, thus, morally undesirable. I show that the statement of unnaturalness cannot be contradicted simply by claiming that human beings are a part of nature, or that human beings are a case apart from nature. After that I analyse the statement of unnaturalness with respect to the following interpretations of the term natural: naturalness as a lack of human intentionality, naturalness as a lack of technology, naturalness as functional normality, naturalness as familiarity, naturalness as something according to Aristotelian telos, and naturalness as the moderate satisfaction of needs. Moreover, natural origin as a basis for human dignity and arguments of playing God are discussed. None of the above interpretations make the statement of unnaturalness convincing. However, some types of naturalness are in other ways morally important in the context of human genetics.

1. Introduction

Both the citizens and the decision-makers are concerned about the naturalness of the new genetics. In Eurobarometers of years 1999 and 2002 citizens' views about naturalness of procedures and outcomes of the new biotechnologies were evaluated through several different questions. The interviewees were asked to react to statements such as "Modern technology has upset the balance of nature"; "Therapeutic cloning threatens the natural order of things"; "Even if animal cloning has advantages, it is basically against nature"; and "Genetically modified food threatens the natural order of things"(Gaskell et al. 2003, INRA 2000). The interviewees found both the procedures and outcomes of the new technologies highly unnatural. For example, 73% of Europeans tend to agree with the claim that modern technology has upset the balance of nature. Only 17% of citizens tend to disagree with this claim and 10% of them are indecisive (Gaskell et al. 2003:39). The interviewees were also asked about their degree of agreement (1 = totally

disagree, 5 = totally agree) with the statement “Even if animal cloning has advantages, it is basically against nature”. The mean of the degrees of agreement was 4.24, which was the highest mean among statements about animal cloning. For example, the mean of the degrees of agreement about the statement “Animal cloning is simply not necessary” was 3.85 (INRA 2000:39). Moreover, group interviews conducted in Denmark may even better indicate the central role of naturalness in public debates about modern genetics. In these interviews, the issue of naturalness was spontaneously taken up by the participants within all groups and they tended to consider genetics rather unnatural. For example, 71% of the interviewees strongly agreed and 16% somehow agreed with the statement that genetically modified food is fundamentally unnatural (Madsen et al. 2002:269).

Even though claims and arguments about the unnaturalness of genetics are frequently stated in public debates, and although many citizens and decision-makers consider them as central to gene ethics, their exact meaning and moral significance has not been widely and explicitly analysed. Such analysis is however urgently needed, not least because of the fact that in non-academic discussions people tend to connect naturalness with moral acceptability and consider unnatural entities and happenings as morally suspicious. The arguments appealing to naturalness are not exceptional in academic ethics either, but their scope seems to be restricted to environmental questions and to the ethics of biological conservation (see for example Angermeier 1994, Angermeier 2000, Lee 1999, Lee 2003). In other ethical contexts, naturalness is often considered morally irrelevant (see for example Karjalainen and Häyry 1992:12-13, Matthews 1988, Sober 1988:180).

I will next analyse statements and arguments appealing to unnaturalness in the context of human genetics. To put it more strictly, I will analyse the possible interpretations of the so-called *statement of unnaturalness*, according to which, practices and/or outcomes of human genetics are unnatural and, thus, morally undesirable. By human genetics I mean all purposeful procedures done to human genes, such as gene tests and gene therapy and those gene transfers in which human genes are transferred to animals (or animal genes to humans). The analysis of the statement of unnaturalness consists of answering the following questions. What kind of different meanings do the terms ‘natural’ and ‘unnatural’ have? Which of those meanings are morally relevant in the context of human genetics? Are some procedures or some outcomes of human genetics unnatural in the sense that implies moral undesirability?

2. Sensibility of the statement of unnaturalness

Arguments appealing to naturalness or unnaturalness are often answered by claiming that any discussion about differences in naturalness is senseless. According to this line of thought, a human being is a part of nature, one species among the others. We have come into existence by natural evolution and our ways of behaviour have also evolved according to its rules. Human beings as well as *all*

their actions and *all* outcomes of those actions are a part of nature and natural in that primary sense. Thus, it would be insensible to try to compare any human-related entities or happenings with respect to their naturalness (Callicott 1996:371, Haila 1997:300, Sober 1988:180). It would be similarly senseless to advise people to act naturally or to produce natural things. Since the opposite to this kind of naturalness is supernaturalness or 'that which breaks the laws of the nature', all our actions and all outcomes of our actions necessarily fulfil the requirement of being natural (Mill 1969:379, Matthews 1988:120, Radcliffe 1984:69, Sober 1988:180). Of course, this applies also to the practices and outcomes of human genetics. Since everything we do or produce is equally part of the nature, human genetics is also equally natural in this sense. Thus, it is not sensible to claim that human genetics is unnatural, let alone argue from its unnaturalness to its moral suspiciousness.

However, this argument for the insensibility of the statement of unnaturalness is not convincing. The view of human beings as part of nature would make all comparisons of naturalness absurd only if the term 'natural' were unambiguous. Only if the expression 'being part of nature' was the only meaning of the term 'natural', any comparison of naturalness would be a senseless project. However, the terms 'natural' and 'unnatural' have multiple different meanings and naturalness, thus, has many different senses in addition to 'being part of nature'. Therefore, the view of human beings as a part of nature does not imply that comparisons of naturalness are never sensible. The sensibility of the comparisons requires, however, that the term 'natural' is not used in the sense of 'being part of nature'.

3. Natural and unnatural behaviour

The sensibility of the statement of unnaturalness may be questioned also in another, somehow opposite, way by claiming that human beings are a case apart from nature. Even though the human species is a product of natural evolution, we have slowly evolved into fundamentally cultural beings existing outside nature's realm. According to this view, human beings, all their actions and all outcomes of those actions are external to nature and unnatural in that sense (Hunter 1996:695, Lee 2003:17). This conception of naturalness may seem as morally insignificant as the first one. Because everything we do or produce is always equally unnatural, it is senseless to compare the naturalness of our actions or their products. It would also be senseless to advise us to act naturally or to produce natural things: these are impossibilities for us (Mill 1969:380-381).

Nevertheless, contrary to the first conception of naturalness, this second one allows the existence of both natural and unnatural entities. According to this view, everything that takes place without the agency of human beings, is natural. On the other hand, everything produced or modified by humans or in any sense defined by the order of humanity, is unnatural (Elliot 1982:84, Hunter 1996:695, Lee 2003:20, Soper 1995:15). Thus, human beings often can – by choosing action or

inaction – determine whether currently natural entities become unnatural. Not surprisingly, this kind of naturalness has been considered valuable in biological and environmental conservation¹ (see for example Angermeier 1994, Angermeier 2000, Elliot 1982, Hunter 1996, Lee 2003). However, no consensus has been reached on the matter and some conservationists oppose the ideal of naturalness (see for example Callicott 1996, Haila 1997). Whatever the case concerning biological conservation, this kind of naturalness is not morally relevant with respect to human genetics. Accepting the statement of unnaturalness under this interpretation (of naturalness) would mean accepting that any influence on other people is morally undesirable. Thus, for the sake of logic we would have to consider all education and health care, for example, as morally suspicious forms of human action.

As the preceding considerations show, acceptability of the statement of unnaturalness presupposes that the term ‘unnatural’ is interpreted as referring to specific types of human action or to specific types of outcomes of human action, not to human interference in general. The more specific interpretation is sometimes formed by including some human behaviour, namely that which is not voluntary or intentional, to the natural realm. According to this view, only our voluntary and intentional actions and products of those actions are part of culture. Other, the unconscious and more biological and instinct based, ways of behaviour are natural (Lee 2003:17–18, Matthews 1988:122). However, this kind of naturalness cannot work as a basis for separating morally acceptable behaviour from the unacceptable. It is self-defeating to recommend that anyone should follow an instruction to act without a conscious intention, since consciousness is needed to follow any instructions. If this kind of account of naturalness is of any use at all, it must be interpreted loosely, and taken to mean something like “act only on impulse and instinct, without reasoning” or “act so as to take minimum use of human intellectual capacities”. However, there is not the slightest reason why anyone should do so. This kind of naturalness is clearly not morally valuable (Matthews 1988:122, Radcliffe 1984:70).

Often the line between natural and unnatural action is drawn at the use of technology. Naturalness then means abandoning new technologies and using old methods, which human beings have used for centuries (Karjalainen ja Häyry 1992:7–8, Katz 1997a, Katz 1997b:122–123). Under this interpretation, natural agriculture means agriculture without chemical fertilizers, or pesticides, or machines based on new technology. Similarly, natural childbirth means giving birth without technical surveillance, medical painkillers, or surgical operations. However, it is not sensible to connect this kind of naturalness to the statement of unnaturalness. If we considered this interpretation as morally significant in health

¹ The suggestion that naturalness in the sense of independence from humans should be accepted as a goal for conservation efforts has been objected by noting that practically every area on earth has been affected by human activity. The objection can, however, be avoided if naturalness is understood as a continuous gradient, not an all-or-nothing affair (Lee 1999:83, Angermeier 2000:375).

care, we would end up criticising not only human genetics but also all medical treatments which use modern technology. Moreover, also our cars, telephones, microwave ovens, and other everyday home electronics would appear morally suspicious.

4. Morally significant forms of naturalness

4.1. Functional normality

The preceding conceptions of naturalness and unnaturalness are not morally relevant to human genetics. Even if the practices and outcomes of human genetics may be unnatural in the sense that they depend on human beings, on conscious actions of human beings, and on human technology, these types of unnaturalness do not imply moral suspiciousness – at least not in the context of human genetics. Other morally irrelevant forms of unnaturalness can be easily found: unnaturalness as statistical abnormality, unnaturalness as rarity or as something that is unprecedented, unnaturalness as repulsiveness (Räikkä and Rossi 2002:33, Sober 1988:180–181), and unnaturalness as abnormality in the sense of being against conventional or cultural norms (Wachbroit 1994:580). However, the terms ‘natural’ and ‘unnatural’ have also morally relevant meanings.

Some forms of naturalness are closely related to normality. Besides its statistical and normative meanings, normality also has a third meaning, the so-called functional normality. Functional normality of an entity or its part means that it does not have malfunctions, in other words, that it works properly as it should. A functionally abnormal being, on the other hand, fails to fulfil its purpose. For example, a functionally normal heart circulates blood in the body whereas a functionally abnormal heart fails to do this (Wachbroit 1994:580–582). Functional abnormalities often cause pain and suffering and shorten the lives of the individuals having them. Intentionally causing painful and life threatening functional abnormalities to human beings is, of course, simply and plainly morally wrong. Moreover, it is common to argue against the use and production of genetically modified animals by referring to the pain and suffering modifications may cause. Even those who accept gene transfers to animals must admit that the production of any single animal with pain causing functional abnormality requires a strong moral argument.² Thus, unnaturalness in the sense of functional abnormality is clearly morally significant.

However, even though naturalness in the sense of functional normality is morally relevant and desirable, all human genetics does not cause functional abnormalities or suffering. Transgenetic sheep and cattle that produce medicine in their milk do not suffer any disadvantage from the human gene they are carrying

² Normally the use and production of laboratory animals with functional abnormalities are argued for by referring to medical benefits the use of these animals may cause to human beings.

(Geenitekniikka tänään 2002).³ Moreover, the purpose of human gene therapy is certainly not to produce functional abnormalities. Rather, its purpose is – similarly to all medical treatments – to eliminate abnormalities and illnesses. Therefore, since not all outcomes of human genetics are unnatural in this sense, this conception of naturalness does not make the statement of unnaturalness convincing, at least as long as it is understood as a statement against all human genetics.

4.2. Customary practices and outcomes

Maybe most commonly the term ‘natural’ is used as a synonym for the term ‘customary’. We tend to consider natural those entities and happenings which we are used to, with which we are familiar and that occur relatively frequently. On the other hand, ‘unnatural’ often means ‘uncustomary’, ‘odd’, and that the entity or happening is not what we are used to (Häyry and Häyry 1989:184, Radcliffe 1984:65–66, Rääkkä and Rossi 2002:33). For example, organ transplants and artificial insemination have certainly, at the time of their introduction to public medicine, been accused of unnaturalness. However, when these medical procedures have become more common and more familiar to us, views about their unnaturalness have also disappeared. Since everything new, odd and uncustomary is not morally undesirable, and since everything old and customary is not morally unproblematic, this form of unnaturalness does not plainly and directly imply moral undesirability.

However, naturalness in the sense of familiarity is not always morally irrelevant. That an entity or a procedure is familiar to us may imply that we know what to expect from it. In other words, familiarity means information and experience of the familiar thing and of the factors and risks related to its use (Medsen et al. 2002:271). Statements about unnaturalness may sometimes be taken as noting a lack of information and the difficulties this lack causes to risk assessment. Of course, familiarity does not always imply safety and unfamiliarity cannot be directly connected to dangerousness. Knowledge and information related to familiarity, however, ease risk assessment, whereas lack of information makes it more difficult and may, in extreme cases, even prevent it. Thus, even though unfamiliarity does not form a good reason for forbidding all human genetics, it is a factor that should be taken into account in the risk analysis of any research and application of human genetics. According to Medsen et al. (2002:271–272), in many guidelines for risk assessment, for example in the ones of OECD (1993) and EU (2001/18/EU), the degree of familiarity is already considered an important factor. However, more efficient and reliable ways for analysing degrees of familiarity are needed.

³ It has been argued that the case of the transgenic sheep and cattle is not free of suffering caused by functional abnormalities. Even though the transgenic animals themselves do not suffer any pain, development of such animals has most probably caused functional abnormalities and suffering to some animals. (Geenitekniikka tänään 2001.)

4.3. Telos and need satisfaction

The terms ‘natural’ and ‘unnatural’ have also other morally relevant meanings. According to Aristotle, every living being develops, and that development is motivated by the so-called telos. Telos is something toward which every being strives; it is the primary goal and the proper end of a being’s development. The striving toward telos need not be conscious; according to Aristotle, even mindless plants have a telos toward which their development is directed (Halper 1999:906, Lee 2003:6–7). The telos of an acorn, for example, is to become an oak and similarly the telos of every human being is happiness. The closer to its telos a being has developed, the more perfect and flourishing it is. Naturalness is related to the telos, because, according to Aristotle, things that take a being closer to its telos, are natural to it. In other words, what is natural to something is that which is conducive to its well-being and encourages it to flourish (Radcliffe 1984:73). Thus, clean water is natural to oaks as well as humans. Similarly, pollutants are unnatural to both since they harm development and prevent flourishing.

If naturalness is understood in Aristotle’s sense as that which promotes well-being, flourishing and, in the case of human beings, happiness, naturalness is certainly morally desirable. Similarly, since unnatural things prevent a being from reaching its telos, they are morally suspicious (Radcliffe 1984:73). However, it is extremely difficult, if not impossible, to use Aristotle’s view as a basis for separating morally acceptable actions from morally unacceptable ones. The difficulty is especially urgent in the context of human genetics. We cannot say whether different applications of human genetics serve development toward the telos; neither can we directly say, whether they are working against the striving for telos. The reason for this is, first, our lack of knowledge concerning the exact nature of telos, and second, that we are unaware of the effects different applications of human genetics may have for reaching the telos. Thus, in the context of human genetics, the Aristotelian sense of naturalness is an empty moral requirement.

Following Aristotle, naturalness is in modern thought often connected to the satisfaction of needs. According to this line of thought, it is natural to act in a way that tends to satisfy our real needs. Intentional superabundant or inadequate need satisfaction is, on the other hand, unnatural (Häyry and Häyry 1989:186, Karjalainen and Häyry 1992:11, Matthews 1988:121). Eating and drinking, for example, are natural forms of behaviour as long as they stay in reasonable and moderate limits. Someone deliberately starving him/herself, however, is behaving unnaturally. Analogously, continuous excessive eating and drinking is, according to this line of thought, unnatural. This conception of naturalness is certainly morally significant. The behaviour that is unnatural in this sense is likely to have unfortunate consequences for the person concerned, whereas natural behaviour is usually beneficial (Mathews 1988:121). Nevertheless, this interpretation of naturalness does not seem to have anything to do with the statement of unnaturalness. Nothing in human genetics refers to inadequate or excessive satisfaction of needs. Therefore, naturalness in this sense does not make the statement of unnaturalness

convincing. However, gene therapy may be seen as somehow analogous to moderate need satisfaction. Both moderate need satisfaction and gene therapy tend to be beneficial to our well-being, or at least health benefits may be the goal of both of them. It might, thus, be claimed that human gene therapy is natural in the same way as all other activities that are beneficial to us through need satisfaction. Thus, naturalness in this sense might be used for arguing *for* human genetics.

4.4. *Natural origin and human dignity*

In the report of the Enquete Commission to the Bundestag of the Federal Republic of Germany (1988), certain kind of naturalness, namely naturalness of human origin, has been firmly connected to human dignity. According to the Commission's line of thought, many forms of human genetics – especially germ line therapy and cloning – violate human dignity by interfering with the natural development of human life.

The fact that human beings are not the project and the planned experiment of their parents, but are the product of the change of nature, secures the independence of human beings from each other, their individual worth. [...] [T]o make the formation of our genotype also dependent on the caprice of other people is incompatible with the essence of free person. (Enquete Commission to the Bundestag of the Federal Republic of Germany 1988:257.)

The commission further states that “[t]he dignity of human beings is based essentially [...] on the naturalness of their origins”. The naturalness of origins implies that human beings and their genetic make up are a “product of change”, not something that has been planned by other people (Enquete Commission to the Bundestag of the Federal Republic of Germany 1988:257–258).

The view adopted by the Enquete Commission contains a clear rejection of cloning people. On the issue of germ line therapy, however, opinions diverge within the Commission. Some members claim that therapeutic germ line interventions are morally unacceptable. According to them, “every intervention in the germ line of the individual diminishes the uniqueness and independence of the individual” and in germ line therapy “personal identity would be manipulated”. Others maintain the view that the correction of genetic defects is not against human dignity because human genome is then measured against nature and good health (Enquete Commission to the Bundestag of the Federal Republic of Germany 1988:258).

The view of the Enquete Commission has some problems. In order to its argument to convince, the Commission needs to explain, why some commonly accepted medical treatments, such as surgeries (that are sometimes done to newborn babies and foetuses) and psychiatric treatments (that are sometimes given to little children), do not threaten the naturalness of human origin and human individuality. It seems that similarly to genetic modifications, these practices may greatly affect the identity and individuality of human beings. Nevertheless, the practices are commonly found morally acceptable (Häyry 1994:211, Sass 1988: 268–269).

If the answer of the Commission relies on the difference between genetic and non-genetic manipulation, then they have to accept a very gene centred view of human identity and individuality. According to the gene centred view, human beings are who they are almost exclusively through the arrangement of their genes. Culture, education and society do not appreciably contribute to individuality. However, not very many philosophers today believe that such a strict gene centred definition of individuality could be credibly defended (Häyry 1994:211–212). Moreover, as Janet Radcliffe Richards (1984:68) points out, if ‘natural’ is understood to mean ‘that which stems from nature alone, without outside influence’, then nothing can ever be natural. Everything, even human embryos and foetuses as well as adult human beings, is always in some environment and influenced by that environment.⁴

5. Playing God

In the context of **human** genetics, appeals to unnaturalness are often associated with accusations of playing God. The argument of playing God may be taken to imply the God planned natural course of events should be preferred over human interference (Chadwick 1990:40, Harris 1992:146, Häyry and Häyry 1989:186). This claim is a special form of the argument type based on naturalness as an absence of human intervention. Thus, it can also be answered in a similar way: Even proponents of the argument must accept that it can sometimes be right to redirect the course of nature. Otherwise, all practices of medicine and education, for example, would be unacceptable (Harris 1992:146, Nuffield Council on Bioethics 1999:15).

However, the accusation of playing God can also be interpreted in another way related to naturalness. According to this line of thought, there are certain natural (God set) boundaries, which should not be overstepped (Chadwick 2000:195). In other words, there are natural limits beyond which human beings cannot go without unacceptably playing God (Häyry 1994:206, Madsen et al. 2002:270, Matthews 1988:123). The essence of this latter kind of playing God objection is that certain types of behaviour – human genetics for example – are likely to have unpleasant and uninviting consequences. Nature (in the sense of the biosphere) sets limits to what is acceptable, since certain human acts might lead into its destruction or other unwanted consequences (Chadwick 1990:44).

This latter kind of playing God objection may be useful, in that it reminds us that we must be particularly careful in assessing consequences of actions describable as playing God. In other words, the accusation of playing God can remind us that some forms of human genetics may have unpredictable and possibly disastrous consequences (Chadwick 1990:45). The weakness of the arguments is that it, contrary to the first impression, is clearly conditional. The

⁴ Arguments appealing on personal identity and individuality need to face the question about the time of the beginning of a person’s life story. For different answers see Chadwick 2001.

moral wrongness of any form of human genetics is, according to it, dependent on its actual consequences (Häyry 1994:207).

6. Conclusion

The terms ‘natural’ and ‘unnatural’ are highly ambiguous and the success of different arguments appealing to (un)naturalness depends on the exact meanings and interpretations given to them. Moreover, the success of unnaturalness arguments is context specific: some forms of naturalness may be morally relevant in one context (for example in the sphere of biological conservation) but not in others (for example in the sphere of health care). In the context of human genetics, no interpretation of unnaturalness makes the statement of unnaturalness convincing. Either the type of unnaturalness is such that human genetics – or some human genetics – is not unnatural in its sense, or the type of unnaturalness is not morally relevant with respect to human genetics.

Nevertheless, arguments and claims based on unnaturalness can be morally important even in the sphere of human genetics. First, unnaturalness is morally relevant and undesirable in the sense of those functional abnormalities which cause pain and suffering. Some possible applications of human genetics are unnatural in this sense and this may form a rather strong argument against them. However, introducing the terms ‘natural’ and ‘unnatural’ to debates over these cases does not clarify moral discussion, rather it seems to make it more tangled. Moral discussions about gene transfers can, and for the sake of clarity probably should, be undergone by speaking directly about animal suffering and human benefits. Second, unnaturalness is morally important, when it is connected to risk assessment in the sense of familiarity. In such cases appeals to unnaturalness are not directed against human genetics in general. Rather, the issue of unnaturalness is raised in order to point out that the degree of unfamiliarity should be taken into account in the risk assessment of applications of human genetics.

All claims and arguments about unnaturalness, even those which do not contain any analysis of the meaning of the term, and which, thus, as such are not very convincing, are morally interesting in one sense. Since people tend to connect naturalness with a lack of moral problems, and since claims about unnaturalness usually are also moral accusations, claims about unnaturalness can be taken as indicators of people’s moral views. Moreover, constant accusations of naturalness, unnaturalness and playing God tell that the phenomena in question might be worthy of ethical inquiry.⁵ The terms ‘natural’ and ‘unnatural’ are often used in their moral senses, when people are not quite certain of the moral status of the phenomenon, or when they are certain of their views but cannot convincingly argue for them. Thus, for an ethicist, the accusations of unnaturalness may tell, that we are dealing with an urgent moral question.

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