



Biology and the technological future of man / Biologie et devenir technologique de l'homme

## Medical treatments of the future: Between animality and artifice



### *Les thérapeutiques du futur entre animalité et artifice*

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## ABSTRACT

Medical treatments are behavioural phenomena developed through acculturation, but dating back to our animal ancestors. Medical treatments, and indeed other cultural phenomena, have been extensively developed in certain human societies, triggering risks that could affect the future of mankind. Excessive modification of the physical animal function of the human body, which has matured harmoniously over millions of years of biological evolution, may change the very nature of the human being. Respect for the animal nature of the human being stands as a key safeguard when considering medical treatments for the future.

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## R É S U M É

Les traitements médicaux sont des traits culturels qui trouvent leur origine chez nos ancêtres animaux. Comme d'autres traits culturels, les traitements médicaux sont surdéveloppés dans les cultures humaines, mais présentent divers risques pour le futur de l'humanité. Trop modifier le fonctionnement animal du corps humain, harmonieusement mûri par des millions d'années d'évolution biologique, pourrait changer la nature même des êtres humains. Le respect de notre nature animale reste donc un important garde-fou dans la considération des traitements médicaux du futur.

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### 1. Introduction

Medical treatments are cultural phenomena, and unlike hereditary, genetic processes of nature, are developed in a cultural context and passed on by individuals via teaching and/or imitation. Despite this basic nature–nurture difference, a nurture or cultural practice is still an extension of nature, bringing new features to processes already present in nature.

A clear and diverting example can be seen with the way humans treat hair. Desmond Morris [1] described humans as naked apes, being born without the fur that covers so many mammals, therefore appearing to be naked. Human civilisation has developed tools, such as blades, then used to shave whiskers and body hair, the impact being to make the human body appear even more naked.

### 2. Cultural phenomena from an animal background

Cultural phenomena can be classified into categories that all arise from animal behaviour. There are

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communication processes, with rare cases of “language” skills in the animal kingdom [2], usually developed as parents nurture their offspring. Animals can display aesthetic preferences, e.g. for shape, colour or vocal effects [3], and there may be shared social norms for the harmonious existence of animals forming a “society”, and these may be seen as basic moral rules [4]. The use of tools as a means of extending natural, physical capacities has been observed in a number of animal species, ranging from insects to vertebrates. Medical treatments may be seen as tools used to improve or restore health.

### 3. Medical treatments arising from animal sources

Medical treatments can be traced back to practices by animals. One well-known example is the habit of cats and dogs eating grass to purge their digestive system. The different practices may be classified as either internal or external.

Examples of external approaches can be seen with birds lining their nests with wild carrot to repel parasites, or birds of prey that bathe in iron-rich water to fight infection, and lemuriform primates coating their fur in fruit juice to repel insects. Another argument, although still a subject of debate, is mutualism, seen when members of one species preen or protect animals of another species, the idea being that it is mutually beneficial; it may thus be cited as a case of external medical treatment.

Internal approaches have been observed in laboratory conditions, reporting, for example, a chicken suffering from acute leg pain displaying a preference for food containing anti-inflammatory compounds, and even showing a proportional relationship between the quantity of anti-inflammatory feed ingested and the severity of the limp. Observational studies of wild chimpanzees [5] have reported them often eating plants, sometimes highly toxic plants, to treat intestinal parasites, ingesting clay (kaolin) to treat diarrhoea, and eating *Trichilia rubescens*, a plant known to have potent anti-malarial properties. It is interesting to note that certain plants used as medication by local tribes are the same as the plants used by chimpanzees, and some tribal therapists acknowledge that they selected certain plants after seeing chimpanzees eat them.

### 4. Extensive use of artificial approaches in human societies

Practices that can be described as “artifice” arise from animal behaviour and have developed to a point of autonomy in a human context. Human nurturing has developed cultural behaviour patterns to a level of great sophistication. Humans have classified themselves as *Homo sapiens* with reference to the ability to have knowledge, but technological developments acquired through such knowledge and skills, i.e. cultural skills, are also extremely important. In modern society, humans live in an artificial, technical environment of their own making, and one of the consequences of this technical environment is artificial changes made to the human body.

There are, for example, external effects on the body caused by tools that can extend the physical capacity of the body, e.g. levers, telescopes and wheels. Other tools can help extend the (internal) power of the mind, e.g. writing instruments, books, libraries, and computers.

### 5. Extensive use of medical treatment in human society

The internal approach applying technical knowledge to the human body has produced medical and other practices. A distinction should be made between therapeutic uses of technical resources (medicine) and possible applications for normal, healthy humans, i.e. technical enhancement of normal, natural potential. For medical treatment, technical resources may help improve the state of a patient suffering from a disorder or deficiency, whereas for non-pathological cases, technical resources are used on normal, healthy subjects to produce above-normal conditions, e.g., through cosmetic surgery or augmented reality.

In a purely medical context, certain techniques may have major consequences on society. High-tech monitoring of pregnancy in modern society saves the lives of babies that otherwise would never have survived. Medical and surgical techniques have contributed to the substantial increase in life expectancy. Many citizens in modern society use palliatives to treat the mind, such as pharmacological compounds to help cope with anxiety, depression, insomnia and a range of mental and neurological disorders. A distinction needs to be made between therapeutic effects intended to restore normal health and elective interventions for reasons of personal preference or convenience, for the purpose of enhancement, usually as perceived by the person concerned or their entourage. This is the case of elective cosmetic surgery chosen to “improve” natural physical features to achieve what the person or society considers as being attractive.

Modern medicine can now provide humans with artificial devices, such as joints or cardiac pacemakers, and this combination of natural and artificial parts may verge towards cyborg status, although physical, biological constraints of the human–animal body limit the scope of the technical components, and the cyborg continues to operate as a human being, i.e. as an animal.

### 6. Medical treatments of the future and their dangers

We will now focus on key areas for future medical developments: gene repair, and brain repair.

While gene repair should be a source of major health benefits, it may also bring serious risks. There are obvious benefits with cures for genetic diseases, but which diseases are genetic? There are clear-cut cases such as haemophilia and colour blindness, but genetic predispositions can be found for a large proportion of human diseases, including cancer. Gene repair therefore, in theory, could be very useful. But the human gene pool is fragile and any modification to this gene pool evolved and inherited from our animal ancestors may introduce a risk of changing the basic nature of the human being, perhaps destroying the harmonious combination of skills developed over the

millions of years of biological evolution that produced the human race.

When considering genetic predispositions, it is not always easy to establish what is negative, and in need of medical remediation, and what is positive and part of local adaptation to a given environment. Fair skin and blue eyes, for example, are ill suited to tropical zones, but well suited to temperate zones. While some predispositions, such as a predisposition to cancer, are clearly negative, it is not always easy to distinguish between positive and negative genetic predispositions. And who is to decide what is good or bad? The person concerned who may not like the appearance of their eyes (a decision determined by personal rather than genuine medical considerations)? The parents? The community? It may even be the State, as was the case in Nazi Germany, the objective being the perfect Aryan, with the possibility of using Mendelian selection to produce fair hair and blue eyes. Quite clearly, caution must be exercised when considering prospects for modification of human genes. The current ban on genetic engineering for human medicine is no doubt very wise.

Similar considerations can be reached for brain repair. Positive results would be the cure of certain neurological and mental troubles, but here too there are genetic predispositions, and indeed any human might be affected by mental disorders or imbalances. The impact of brain repair may outweigh the potential benefits. The balance of the human mind is very delicate, and this is an intrinsic part of human nature. The human brain has been forged over millions of years of evolution, starting from our animal ancestors, and any modification is fraught with danger. Once again, who will decide what is genuine therapy and what is not? Which predispositions should be modified? What norms or standards should apply to the brain?

## 7. Long-term future treatments

Modern man may hope to transcend nature, to achieve immortality of the mind, and even physical immortality, defying physical death of the body, of the human–animal.

Medium-term prospects could include greater mental longevity through longer physical life expectancy produced by artificial modification of human physiology. Imagination and conjecture could produce scenarios with artificially triggered dysfunctions affecting the biological cycle of the human–animal, for example with puberty at the age of forty or menopause at 150, but while changing

the natural cycle of the human body, such scenarios still remain within animal constraints applying to the newly modified body that will still include puberty and menopause.

A total departure from animal nature is a standard plot in the realms of science fiction, with knowledge from the human mind being transferred to artificial systems that will survive forever. Today science fiction may offer interesting perspectives for philosophical debate, but it cannot provide realistic prospects. When considering medical treatment and measures for genuine or frivolous reasons, the general rule applying is due respect for the biological regulation of the human–animal.

## 8. Conclusion: animality as a safeguard

We have seen that medical treatments are nurture phenomena in a cultural context, yet they originally came from our animal ancestors. We have observed that modern society often makes extensive use of medical treatments (an observation also applying to other nurture phenomena). Such extensive use can pose risks for the future of mankind, the main risk being changes to the biological function of the body of the human–animal as developed over millions of years of evolution, perhaps jeopardising the human identity of *Homo sapiens*. Proper respect for our animal background and nature stands as a key safeguard when exploring prospects for medical science in the future.

In conclusion we wish to pay tribute to the French geneticist André Langaney [6], who stated that we should recognise that “we are animals and be proud of it”.

## Disclosure of interest

The author declares that he has no conflicts of interest concerning this article.

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