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**THE PRINCIPLE OF RESPONSIBILITY
IN RELATION TO BIOTECHNOLOGICAL
PROGRESS IN MEDICINE
(FUNDAMENTAL MORAL AND LEGAL ISSUES)**

Introduction

Every science aspires to have potential applications. Scientists work to achieve concrete goals. In doing this, they have a power greater than that of politicians, who are held to account by society.¹ This is why the issue of scientists' responsibility for the world's future assumes such great importance. In the field of medicine, in the light of new biotechnological capabilities, we are today faced with a quite explicit question: should everything that is technically possible be permitted by law? Who, and on what principles, is to take responsibility for the activity of experimenters, which may have an impact on the condition of future generations? Difficulties in giving an unambiguous answer result partly from the lack of doctrinal consensus. Biotechnological progress has exposed gaps in the existing system of supervision over biomedical research.²

The risk of doing harm is an inseparable feature of any kind of medical experiment. Resulting from it is the issue of a doctor's personal responsibility. Today this issue arises most commonly in relation to liability under civil law, as is shown by the growing number of cases where patients pursue claims on the grounds of improper medical treatment. Numerous controversies arise in areas such as reproduction and in relation to the occurrence of prenatal and preconception injuries.

¹ T. Kielanowski, *Odpowiedzialność uczonych. Dylemat współczesnej nauki*, Warszawa 1970, p. 41–46.

² F. Fukuyama, *Koniec człowieka*, Kraków 2004, p. 267.

Moreover, there arises a question – a hypothetical one for the moment – concerning the responsibility of “artificially manipulated” individuals. Soon it may be asked who is to take responsibility for a person who has undergone some radical kind of transplant (e.g. of the head). Difficulties in resolving the issue of responsibility also arise out of the development of neuropharmacology and new possibilities of controlling human behaviour. Doubts arise in relation to issues of responsibility for children born as a result of artificial reproduction. Matters of filiation become more complex as different varieties of parenthood come into being.³ It is also not clear who is to be liable for the potential actions of a cloned human being: can a clone, being an artificial creation, be ascribed any kind of responsibility? Such hypothetical problems are numerous, and with time, as biotechnological progress is made in the field of medicine, their number will grow even higher.

The aim of this paper is to draw attention to the fundamental issues relating to the question of responsibility, arising in the areas of contemporary bioethics, biojurisprudence and biolaw. The author is aware of the extensive simplifications being made when analysing these issues. The subject requires deeper exploration, and this work can serve merely as a contribution to the discussion.

I

There is an increasingly general awareness today that the progress of science cannot be checked, and the rate of its development cannot be slowed down without repercussions. T. Kielanowski points out that technical progress is linked with a certain human drama, one which may change into a tragedy: “(...) humanity has become a slave of civilization and ever-advancing science, in that it cannot live without it, but at the same time does not control it and is afraid of it (...)”.⁴ How can we prevent this? We can do so only when people control technology, instead of technology controlling people. And although the foregoing statement sounds like a truism, in order for this to happen in reality people must have clearly defined goals – values for which we could “harness“ technical forces.⁵ There is not, however, any developed consensus in this matter. Modern technology has given rise to

³ Legal, biological, genetic, psychological, sociological, etc.

⁴ T. Kielanowski, op. cit., p. 115.

⁵ R. Tokarczyk, *Prawa narodzin, życia i śmierci*, Kraków 2000, p. 294.

activities which are so new that they cannot be embraced within systems of classical ethics.⁶ It can, nonetheless, be noted that ethical and legal viewpoints relating to technical progress are moving – under the conditions of European civilization – in the direction of utilitarian maximization of the good and minimization of the harm caused by the technologies.⁷

In the development of science and civilization today, a huge role is played by biotechnology, closely related to the medical sciences. It should be pointed out that medicine, as a science, has certain special features. It is based on empiricism, observation, experiment and induction, and not on speculation or deductive reasoning. M. Safjan notes that medicine has encroached into new areas “where it is increasingly difficult to make distinctions between standard methods and innovative ones, or those which are pure research experiments. The speed at which modern medical ‘technologies’ develop and spread is an inseparable feature of contemporary civilization (...).”⁸

The concept of *biotechnology* is most often explained as the doing of good and rendering of services with the use of biological methods.⁹ Biotechnology is undoubtedly one of the most promising fields of industry in the 21st century, having an impact on the chief areas of human life and activity. Over recent years it has been developing exceedingly quickly. And although the resulting benefits (e.g. economic and health advantages) can be belittled, it must be remembered that biotechnology is creating new, previously unknown problems of a philosophical, moral and legal nature: “The progress of the biological sciences and the development of biotechnology not only extend the scope of known possibilities of action, but enable a new type of interference. What was previously ‘given’ as organic nature and could at most be ‘bred’ can today be the subject of deliberately directed intervention. (...) The distinction ‘to be a body’ and ‘to have a body’ becomes astonishingly topical; there is a blurring of the boundary between the nature we ‘are’ and the organic equipment which we ‘give’ ourselves. The subjective maker then finds itself in a new situation with respect to itself: it can interfere in the organic substrate of its own subjectivity.”¹⁰ It therefore

⁶ H. Jonas, *Zasada odpowiedzialności*, Kraków 1996, p. 34.

⁷ R. Tokarczyk, op. cit., p. 296.

⁸ M. Safjan, *Prawo i medycyna. Ochrona praw jednostki a dylematy współczesnej medycyny*, Warszawa 1998, p. 166.

⁹ T. Twardowski, A. Michalska, *Dylematy współczesnej biotechnologii z perspektywy biotechnologa i prawnika*, Toruń 2000, p. 14–15.

¹⁰ J. Habermas, *Przyszłość natury ludzkiej. Czy zmierzamy do eugeniki liberalnej?*, Warszawa 2003, p. 19.

becomes realistically possible that biological progress may be used as a tool of dictatorial authority of human being over human being.¹¹

The incursion of technology into human birth, life and death may endanger basic goods such as human life, autonomy and dignity, the inviolability of the individual's psychophysical integrity, freedom of belief and custom, etc. There are threats to various spheres of human existence, but primarily intimacy and privacy.

The progress of biotechnology in the medical field has led to the development of *bioethics*. Based on the methodologies of many sciences, bioethics describes, analyses and evaluates – in the light of moral values – the effects of artificial interference in the natural processes of birth, life and death, connected with biogenesis, biotherapy and thanatology.¹²

In bioethics, two extremes can be observed as regards the approach taken to issues of biotechnological progress in medicine. The liberal approach is based on relativism of values and emphasizes the principles of freedom of the individual and freedom of scientific activity. Meanwhile the absolutist viewpoint, closely linked to Christian personalism, denies the legitimacy of medical experimentation on the grounds of the inviolability of the divinely ordained order of nature.

In practice, attitudes to biotechnology depend to a large degree on one's belief system. Religious persons express far-reaching scepticism. They distance themselves from, or simply reject, biotechnological capabilities such as human cloning or all embryonic stem cell research.¹³ Those with secular beliefs recognize the benefits of the new biotechnological techniques and are tolerant towards them. It seems, though, that attitudes to biotechnology are influenced – to a greater extent than by belief systems or real medical knowledge – by habits of thought, popular opinions, myths and irrational

¹¹ B. Suchodolski, *Labirynty współczesności. Niewola i wolność człowieka*, Warszawa 1975, p. 19–20.

¹² Biogenesis is connected with the biological beginnings of human life (e.g. animation of the human embryo, abortion, prenatal experiments: medical assistance to reproduction in the form of *in vitro* fertilization, prenatal diagnosis, foetal therapy, etc.). Biotherapy involves issues arising in the course of a person's life, connected with the treatment of that person using biotechnological means. Thanatology concerns issues related to human death (e.g. artificial life support, euthanasia, treatment of human remains, etc.). Certain significant issues, nonetheless, cross the borders of this classification (e.g. cloning, related to human biogenesis, but also concerning the continuation of human life; a similar situation applies in the case of cryonics, transplantation, and certain experiments involving human stem cells).

¹³ A comprehensive legal analysis of issues of the cloning of humans and embryonic stem cells in Polish jurisprudence can be found (in:) J. Kapelańska, *Klonowanie człowieka i embrionalne komórki macierzyste w świetle prawa międzynarodowego i porównawczego*, Toruń 2006.

fears. Such fears are augmented especially by the cases known from history where science has been abused and its achievements put to use against humanity.

A practical consequence of the appearance of bioethics is the shaping of what is called biojurisprudence. According to R. Tokarczyk – the originator of the concept – biojurisprudence “is one of the newest fields of jurisprudence, coming into being under the influence of the use of biological discoveries, with the help of technology, by medicine, for the purpose of interference in the natural processes of life, particularly human life.”¹⁴

A result of the progress of biotechnology in the field of medicine, and also of the development of bioethics and biojurisprudence, is the appearance of a new field of law, called biolaw, which according to R. Tokarczyk is to define the scope “(...) of the legal use of biological (biotechnological) discoveries, through technology, by medicine, evaluated by bioethics, considered by biojurisprudence (...)”¹⁵

Appropriate legal regulations would combat potential threats, regulate new phenomena, and change and adapt existing laws to meet modern requirements. This is the minimum role of biolaw. It should lay down legal grounds for medical interference and experiments and set limits on them, in order that the zeal of doctors and biologists to carry out research should not lead to infringement of the rights of the individual.

As M. Safjan notes, there is at present a lack of clarity as to the direction which future legal measures are to take, “for it depends on the acceptance of specific axiological assumptions, accepted philosophical ideas and the resulting hierarchy of values.”¹⁶

Of particular importance in Polish bioethics is the view – established under Catholic influence – of a person as a creation constituting a substantial unity of body and soul, who is shaped in the image of God, and who should not encroach into areas reserved for the Creator. There is a dominant pessimistic attitude to biotechnological progress in the field of medicine, reflected in the arguments, advanced on the basis of doctrine, referring to the “slippery slope”, “playing God”, etc. According to B. Chyrowicz, these constitute an appeal for sensible judgement.¹⁷ Biotechnological pessimism has an influence on biojurisprudence and on Poland’s developing biolaw.

¹⁴ R. Tokarczyk, op. cit., p. 29.

¹⁵ Ibidem, p. 33.

¹⁶ M. Safjan, op. cit., Warszawa 1998, p. 10.

¹⁷ B. Chyrowicz, *Bioetyka i ryzyko. Argument „równi pochyłej” w dyskusji wokół osiągnięć współczesnej genetyki*, Lublin 2002, p. 336.

A situation at the opposite end of the scale exists in most European countries, which are characterized by marked biotechnological optimism. Under the influence of Cartesian thought and the consequent dualist conception of man, there appear various conceptions of the philosophy of the individual, giving grounds for the development of the natural sciences.¹⁸ The body of a human begins to be treated on the pattern of a machine, whose worn-out or broken parts ought to be replaced by new ones.¹⁹ This provides a doctrinal impulse to the development of biotechnology in the field of medicine. Faith in medicine begins to take the place of ethics. More and more often it is acknowledged that only doctors should have a voice in medicine-related matters, and that it is they who are to a large degree responsible for the consequences of biotechnological progress in that sphere.²⁰ The acceptance that a living body is nothing more than a machine in motion leads to the thesis that no mechanical (physical) transformations of the body violate the person as such. Hence, action which leads to the improvement or prolongation of human life cannot be immoral. The discovery of the complete human genome strengthens the position of the proponents of genetic determinism. There is a growth in the importance of the utilitarian approach and of the deontological theories of rights based on it.²¹ Ever more popular in practice are bioethical theories, focusing on the criterion of ‘quality of life’, which assert that human life – when a person is seriously handicapped – has no value. Its destruction should not be regarded as evil.²² Besides, it is the individual who is responsible for his own life, and thus no-one can hold back scientists (doctors) from making efforts to improve nature, provided that there is no proof that there is any real danger associated with this.²³ A consequence of biotechnological optimism

¹⁸ For information on the influence of Cartesian thought on contemporary philosophy, see e.g. J. Kopania, *Etyczny wymiar cielesności*, Kraków 2002, or *Boski sen o stworzeniu świata. Szkice filozoficzno-teologiczne*, Białystok 2003.

¹⁹ J. O. de La Mettrie, *Człowiek maszyna*, Warszawa 1984, p. 22.

²⁰ J. O. de La Mettrie writes, for example: “Only doctors have examined and explained the labyrinth which is man. Only they uncovered the springs concealed under the cover which hides so many miracles from our sight. Only they, calmly observing our soul, saw it a thousand-fold in misery and in glory, neither despising it in the first and nor admiring it in the second. I repeat, it is only doctors who can speak in this matter.” See J. O. de La Mettrie, *op. cit.*, p. 73–74.

²¹ A special position among contemporary deontological concepts which permit efforts to “improve on God” is held by the theory of R. Dworkin, who states that human life ought to be successful first and foremost; thus any efforts undertaken in order to improve on nature are justified.

²² This view is taken, for example, by P. Singer; see: P. Singer, *O życiu i śmierci. Upadek etyki tradycyjnej*, Warszawa 1997, p. 41 et seq.

²³ J. Habermas, *op. cit.*, p. 35 et seq.

is the legalization of various kinds of medical experiments. Recently there has been great controversy concerning the legality in the UK of creating hybrid embryos, obtained by combining human DNA with the female cells of animals.²⁴

Biotechnological progress in the field of medicine is closely linked to the issue of responsibility. Of particular importance is the responsibility of scientists for the future of humankind, and the personal responsibility of doctors in the case of failure of medical experiments.

II

According to encyclopaedia definitions, “responsibility” means the taking on oneself of the effects of one’s own actions. However, only in the 20th century did it become a strictly philosophical concept, without which there can be no attempt to give an ontological description of human existence. The problem of responsibility is becoming a part of philosophical anthropology, of the ontology of human existence: “to be a human being” means “to be responsible”.

According to Kierkegaard, responsibility is based on a “self-obligating bond” joining a man to the world. It is a part of the existential equipment of a human being. It is implied by a person’s relationship with the world, with others and with himself.²⁵

L. Kołakowski claims that without responsibility we cannot be moral subjects, or indeed subjects at all.²⁶

R. Ingarden points out that the phenomenon of responsibility focuses around four situations: 1) someone incurs liability for something; 2) someone takes responsibility for something; 3) someone is called to account for something; 4) someone acts responsibly.²⁷

For a long time doctrine was dominated by the so-called negative approach to responsibility, defining it on the basis of evil committed, for which a moral or legal punishment ought to be suffered. Today a positive approach

²⁴ Scientists believe that this may speed up research into the incurable Alzheimer’s and Parkinson’s diseases. Hybrid embryos, produced by combining an animal ovum cell with human genetic material, taken from the skin or a sperm, for example, could be used to obtain stem cells; see K. Świerczyńska, A. Grabarczyk, *Eksperyment podzielił świat*, *Dziennik* 7 Sept. 2007, p. 8–9.

²⁵ S. Kierkegaard, *Albo-albo*, vol. II, Warszawa 1976, p. 113.

²⁶ L. Kołakowski, *Moje słuszne poglądy na wszystko*, Kraków 1999, p. 203 et seq.

²⁷ R. Ingarden, *Księżeczka o człowieku*, Kraków 2003, p. 75.

is increasingly common, which makes it possible to show the power of responsibility: “which looks into the future and shows a person the good which is dependent on him. The growing feeling of responsibility here is not of the nature of a feeling of guilt, but is a help-giving feeling of one’s own opinion, dignity and significance.”²⁸ In this regard the responsibility of scientists for their work takes on a special significance. This type of responsibility would seem at the present time to be moving ahead of all others. After all, the future of the world is in the balance.

Reference to the freedom and competence of specialists has ever-increasing significance. A scientist’s responsibility is a relation between the holder of responsibility – the scientist (a doctor, for example) – and other parties (connected with him through the subject of the responsibility) such as the authorities, society, a nation, humanity.²⁹ It has been noted that “almost all responsibility for the course and effects of development of research and therapeutic techniques rests within the medical world itself, which cannot cede much of this responsibility to the legislature, to which by the nature of things it is obliged to recommend decisions.”³⁰ For this reason it is concluded more and more frequently that “the only honest and rational approach for the medical world to take is one of intellectual authority and moral principle.”³¹ An example of this type of argument can be found in the *Declaration in Defence of Cloning and the Independence of Scientific Research*, published in 1997 by a group of representatives of various natural and philosophical sciences.³² According to this declaration, a decision on the permissibility of experimental actions should be taken by the scientific bodies which are qualified to pronounce on issues involving the latest medical techniques. This does not mean that axiology is neglected completely. There is a place here for account to be taken of absolutely fundamental values, developed within European civilization, common to democratic societies. Attention is also drawn to the importance of the conscience, not only the technical competence, of experts.

It would appear that the principle of scientific freedom ought to be treated as a priority. Scientists have already proved to the world that they can work effectively only in conditions of full and uninhibited freedom to

²⁸ J. Filek, *Filozofia odpowiedzialności XX w.*, Kraków 2003, p. 12.

²⁹ R. Tokarczyk, op. cit., p. 263.

³⁰ J. Hartman, *Klonowanie człowieka jako wyzwanie*, *Medycyna Wieku Rozwojowego* 1999, No. 3 (Supplement 1), p. 30.

³¹ Ibidem, p. 31.

³² *Medycyna Wieku Rozwojowego* 1999, No. 3 (Supplement 1), p. 229–231.

carry out research: “Nothing, no dogma, no inviolable truths, can inhibit their freedom to draw conclusions from their observations or experiments.”³³ Unlimited freedom would, nonetheless, have to be secured by an absence of responsibility for the possible consequences of abuses of scientist’s discoveries. For this reason it is necessary to make a legal demarcation of its boundaries. Decisions concerning the development of science should be guided by reason. The principle of scientific research planning and the principle of scientists’ responsibility for the subject matter and consequences of their experiments in no way infringe scientific freedom. This freedom involves the right to freely propagate the content and results of one’s own research, the right to comment on scientific accomplishments according to one’s own beliefs and conscience, and the right to put forward hypotheses and assert the need for new research. The limit of scientific freedom is thus set by the inviolability of the public interest of humankind.³⁴

In considering the principle of responsibility in conditions of biotechnological progress, we cannot overlook the thoughts of the contemporary philosopher H. Jonas, who proposes that Kant’s categorical imperative be replaced by a rule which is appropriate to a new type of human activity. It might take the following form: “Act only in such a way that the effects of your actions can be reconciled with the continued existence of authentic human life.”³⁵ This implies that we are permitted to risk our own life, but we may not risk the life of humanity. Novel types of activity require an appropriate ethics of prediction and responsibility, which will be just as new as the potential situations with which it must deal. Seeing that man himself has been “(...) placed among the objects of technical activity, Homo faber now addresses himself – the creator of all other things – and prepares to transform even himself.”³⁶ This concerns possibilities of prolonging human life, as well as possible pharmacological behaviour control or even genetic modification enabling people to take evolution into their own hands, having set themselves the goal not merely of preserving the integrity of the species, but of modifying it by perfecting their own design. H. Jonas distinguishes formal responsibility from material responsibility. Formal responsibility is a consequence of the doing of damage by one who acts (or refrains from acting). It is reflected in civil or criminal liability. Material responsibility, on the other hand, involves settling accounts *ex post facto*. To feel responsi-

³³ T. Kielanowski, *op. cit.*, p. 122.

³⁴ *Ibidem*, p. 136.

³⁵ H. Jonas, *op. cit.*, p. 38.

³⁶ *Ibidem*, p. 50.

ble does not mean to feel guilty of some already committed evil, but means to feel capable of taking care of some good which is dependent on us and useful for us.³⁷ This responsibility obliges us to perform specific acts. It is this which constitutes the kernel of humanness. It may become the foundation of a new ethics – the ethics of responsibility for the future. H. Jonas states that we are living today in an axiological vacuum. What is becoming the basis for our responsibility is a “heuristics of fear”, based on the fear of a possible catastrophe befalling civilization. Today this is also widespread in connection with medical interference with the human body. It often causes us to refrain from acting.

Together with the development of new technologies, there arise issues of historical responsibility – responsibility for the life and quality of life of future generations – which concern another outstanding philosopher, Z. Bauman. He notes that, with technological progress, a new domain is coming into being in which it is not possible to define clearly the borders of what is permissible, meaning that for which one can take responsibility. Care for the future of humanity is the overriding obligation in the collective actions of man in the era of technical civilization. Moral autonomy means moral responsibility – not to be taken away, but not to be renounced either.³⁸

In international law, in European Union law and indeed in the laws of individual democratic countries, there is a lack of unambiguous regulation concerning this type of responsibility. It becomes apparent that there is a gap in the law as regards the monitoring of biomedical research, resulting from the lack of definition of the boundaries of the responsibility of the state or the responsibility of a specific professional group for experimental activity with respect to future generations. It is undeniable that, in the case of scientific experiments (research), the risk associated with the occurrence of accidental and inevitable damage is borne by the whole of society, which benefits from the development of medical knowledge.

III

Alongside the responsibility of scientists, another important role is played by personal responsibility. Some believe that a liberal civilization destroys the very idea of such responsibility. In contemporary global societies there is a noticeable tendency towards a gradual abandonment of the

³⁷ J. Filek, *op. cit.*, p. 235.

³⁸ Z. Bauman, *Dwa szkice o moralności ponowoczesnej*, Warszawa 1994, p. 75, 267.

idea of a moral responsibility to be taken by individuals for their choices. Responsibility for individual actions is increasingly frequently offloaded onto the state.³⁹

It is natural that the benefits in the case of therapeutic procedures are felt in general by the patients themselves, and it is they who should also bear the potential risk. Every free human being is thus burdened by personal responsibility for his or her fate. This applies also to situations which result from biotechnological progress. In agreeing to take part in a medical experiment, an individual must be aware of its consequences. Autonomy of will is fundamental.

In connection with damage resulting from medical experiments, there arises the question of the personal responsibility of the doctors themselves. It must be borne in mind that their work is concerned with the highest values: human life, health, dignity, etc. Therefore the responsibility of a doctor ought to be based on objective assessments. However, discussions on this topic are dominated by emotions and subjective opinions, particularly those of the patients and their families.

Most generally, a doctor's responsibility results from the particular type of relationship existing between doctor and patient. It relates to his undertaking various actions in the course of medical experiments, which after all are not guaranteed to succeed. They may result in harm in the form of damage to health or even loss of life, or at least a state where there is immediate danger of such consequences.

Dominant today is the principle of individualization and personalization of responsibility. The actions of a doctor are evaluated from the point of view of his or her consciousness, i.e. the awareness of adverse effects. A doctor as a responsible individual must be free in his intentions and decisions and in their realization. Thus any duress excludes the doctor's responsibility. For it to be possible to speak of responsibility, there must be a causal link between two facts, of which one became the cause of the fact following after it as its effect.

A doctor may incur responsibility of different types. Of great importance is moral responsibility. Moral norms are written down in codes of medical ethics, which means that representatives of the medical professions are bound not only by the rules of individual morality, but also by the principles of medical deontology. A particularly significant type of responsibility for a doctor, however, is legal responsibility, regarded as a consequence of

³⁹ L. Kolakowski, op. cit., p. 203 et seq.

a violation of a legal standard. Professional (disciplinary) liability is extremely important also.

It should be noted that doctors' legal responsibility is most often reflected in practice as liability in civil law. In discussions of civil liability attention is drawn to the fact that risk of damage is an inevitable feature of any experiment. It is thus possible to talk of a greater or smaller probability of such damage. A legally conducted experiment generally gives no ground to exact such liability, as it is devoid of features of illegality. As a rule, civil liability is made dependent on fault.⁴⁰ The principal condition is that there should have been an error of medical practice, usually regarded as meaning action not in accordance with generally recognized principles of medical science.⁴¹ Increasingly popular today is civil liability arising from reproductive issues. This concerns firstly *prenatal injuries*, relating to liability for damage done to a child who has been conceived but not yet born.⁴² Civil liability of a doctor may also relate to events taking place prior to a child's conception, causing damage to the body or to health, if they were the fault of medical staff (*preconception injuries*).⁴³ Issues of civil liability are also arising increasingly often in relation to the conception (birth) of an unplanned child (*wrongful conception*), birth of an unwanted handicapped child (*wrongful birth*) or a child who "ought not to have been born" (*wrongful life*).⁴⁴

The basis for criminal liability in all modern systems of so-called continental law includes the meeting of all statutorily defined conditions for a prohibited act. The consequence of a medical experiment may be damage to the life and health of persons affected by the experimenter's actions. Current laws of individual European Union countries lay down rules on a doctor's criminal liability for failure to provide medical treatment, and for unintentional offences against life and health. Rules are also laid down on criminal liability relating to non-therapeutic medical actions, such as transplantation, abortion, cosmetic procedures, castration, sterilization,

⁴⁰ M. Safjan, op. cit., p. 199-200.

⁴¹ Several theoretical types of error are distinguished, such as diagnostic error, therapeutic error, prognostic error, error of adjudication and technical error; see M. Filar, *Odpowiedzialność lekarzy i zakładów opieki zdrowotnej*, Warszawa 2004, p. 85; M. Nesterowicz, *Prawo medyczne*, Toruń 2005, p. 156.

⁴² M. Nesterowicz, *Odpowiedzialność cywilna według common law za szkody wyrządzone nasciturusowi przed i po jego poczęciu*, Państwo i Prawo 1983, No 8.

⁴³ See, e.g. M. Nesterowicz, *Prawo medyczne*, Toruń 2001, p. 175; M. Safjan, *Prawo wobec ingerencji w naturę ludzkiej prokreacji*, Warszawa 1990, p. 174 et seq.

⁴⁴ See T. Justyński, *Poczęcie i urodzenie się dziecka jako źródło odpowiedzialności cywilnej*, Kraków 2003.

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sex-change operations, cloning, etc. The law lays down specific consequences in case of breach of the requirement for consent to be given by the patient. It also defines criminal actions in the medical sphere such as euthanasia and assisting suicide.⁴⁵

Summary

Along with biotechnological progress in the field of medicine, there arise previously unknown moral and legal problems. The development of bioethics is shaping the new fields of biojurisprudence and biolaw. Gaps are coming to light in systems of legal regulation in the area of biotechnology, particularly as concerns the scope of legal interference in the spheres of human birth, life and death. There arise various questions relating to the responsibility of doctors, which require legal regulation. It would appear particularly important today to lay down legal regulations on the responsibility of scientists for the future of humankind. However, the issue of doctors' personal responsibility for failure of medical experiments cannot be belittled. Poland lacks specific laws to regulate these issues.

⁴⁵ See M. Filar, *Lekarskie prawo karne*, Kraków 2000.