

Barbara CHYROWICZ SSpS

THE DILEMMAS OF A SORCERER'S DISCIPLE

Arguments For and Against Manipulation of the Human Genotype

Contents: I. Classification of genetic manipulation. II. Types of Ethical Argument: 1. Arguments used by the proponents of gene therapy. 2. Arguments Used by the Opponents of Gene Therapy. 3. Ambivalence of Arguments Used.

In 1986, Jacques Testart, an eminent French scientist and the "creator" of the first child conceived in vitro, proposed an international moratorium on embryonic engineering. The significance of this fact lay in that Testart appealed for cessation of all the research work done in this field (which he himself totally abandoned). Why did he do so? "In the future" - says Testart - "we will try to produce a child bearing given properties, according to a given measure. (...) I also demand the rights for the logic of non-discovery, for the ethics of non-investigation. Let us stop pretending that genetic research itself is neutral, and that it is only its use that can be either good or evil"¹ Although the birth of the first child conceived in vitro was considered as a "scientific success" in France, the creator of this event was not awaiting it with enthusiasm, but rather with deep anxiety. "One surplus chromosome, or one lacking chromosome - which will probably happen one day (writes Testart) - is enough for the great première of the FIVETE² performance to change into an apocalypse. (...) The medical bonzes and the bonzes of experiment, as well as press jackals and professional moralists, would unanimously state that they foresaw it, that they warned of pretending to be a sorcerer's disciple"³. A disciple with imagination ...?

A sorcerer's disciple is one who is not satisfied with the knowledge he possesses; he is attracted to the unknown. Besides, he anticipates that the secrets of knowledge that have not been uncovered to him so far are the most promising ones, and that by making use of them he may change his status of a disciple into the one of the master. Fascinated by the Promethean vision of his mission, the disciple renounces his mas-

¹ Cf. J. TESTART, *L'œuf transparent*, Paris: Flammarion 1986. Polish version: *Przejrzysta komórka*, transl. by J.A. Żelechowska, Warszawa 1990, 19-20.

² FIVETE is the abbreviation of the Latin term: *Fecundatio in Vitro Et Transferatio Embryonis*.

³ Cf. TESTART, *Przejrzysta komórka*, *op. cit.*, 64-65.

ter's assistance and experience, trying to reveal the deepest secrets of life by himself. Has the master been hiding them away from him, afraid of losing his power? Would the bounds set on the disciple's ambitious intentions mean nothing but, simply, the master's weakness, his fear of the unknown, or his conservative attachment to the already recognised ways? Or maybe it is not the master, but the proud disciple, who lacks imagination?

While calling for the abandonment of genetic research, Testart writes about the "future" It has been ten years now since this significant appeal was made. The extreme and rapid scientific progress within the domain of biology and genetics that has taken place during the recent years has shown how close the perspective of yesterday's "future" is. However, the application of the recent scientific discoveries made in the field of genetics not only threatens us with the apocalyptic vision of a disaster, but it also provides us with new ways to treat genetically conditioned illnesses. Hence, should we not consider rather the ambivalence of scientific research than its neutral character? Is abandonment of scientific research not tantamount to resignation from benevolent therapy? Thus a sorcerer's disciple faces a grave dilemma: on the one hand, there are threats resulting from the possibilities of interference in the human genetic code, while on the other - thanks to this interference - there appears the perspective of the ability to diagnose and treat diseases which have been so far considered as incurable. If the disciple honestly seeks for the answers to the questions that worry him, he will leave the emotions aside, and thoroughly analyze the arguments for and against genetic manipulation.

I. Classification of genetic manipulation

The concept of "genetic engineering" in its broad sense refers to all the manipulation which results in the appearance of new hereditary characteristics of an organism. Genetic engineering is a branch of genetics which deals with inserting a precisely determined section of the donor DNA, which corresponds to one or some genes, into the cells of another individual in order to evoke a permanent change in his characteristics. Genetic engineering uses various kinds of biochemical, biophysical and biological manipulation (e.g. recombination, cloning, selections) which lead to a change of the hereditary features of an organism. The terms: "DNA recombination technology" or "biotechnology" are also frequently used⁴ Today, many geneti-

⁴ I adopt this definition after the handbook: G. DREWA (ed), *Podstawy genetyki*, Wrocław: Volumen 1995, 297 (similar definitions can be found also in other handbooks on genetics). In his book: *Granice życia. Dylematy współczesnej bjoetyki*, Kraków: WAM 1994, T. Ślipko refers to genetic engineering as to "a broad spectrum of different techniques of genetic manipulation" (79). The third chapter of Ślipko's book, entitled *The Limits of Genetic Engineering* (71-186), takes up a much broader approach than the above definition would imply. However, Ślipko observes that, strictly speaking, the term in question refers only to determining techniques that are used to interfere in genetic material. The author, as it seems, refers to the general body of problems related to the contemporary genetic discoveries, and the arrangement of the material which his book covers is determined by this approach.

cians believe that the development of genetic engineering, if applied to the human population, may significantly influence the improvement of the genetic "endowment" of the humanity. The traditional approach of eugenics was to eliminate pathogenic genes from the population. If we agree that the field of eugenics is limited to genetic manipulation, then the concept of eugenics turns out to be narrower than the one of genetic engineering. At present, medical science attaches more importance to the so-called euphenics. Euphenic manipulation does not alter the genotype (the set of all the genes present in a given individual's cell), yet it aims at the elimination of the consequences of a genetic disease, that is, at the "improvement" of the phenotype (which is the set of the features of a given individual)⁵ The prevailing classification of eugenic manipulation distinguishes between the negative (therapeutic) eugenics and the positive one (creating new genetic and social structures)⁶, or - in short - it distinguishes between therapeutic and eugenic manipulation⁷ However, this division is questioned due to the mentioned difficulty with determining the ultimate borders between the therapeutic interference and the non-therapeutic one⁸

Another classification can be proposed as far as the kind of the therapy employed is concerned⁹ The three modalities of the possible therapy:

- "mixed" germ line/somatic cell therapy,
- "pure" germ line therapy,
- "pure" somatic cell therapy,

ultimately determine four kinds of possible genetic manipulation:

- (1) The object of manipulation are somatic cells, yet the manipulation involves a genotype alteration. The justification of this kind of manipulation would have to refer to the law of double effect¹⁰;
- (2) The target of manipulation is somatic cells, the genotype remaining unaltered;
- (3) The aim of manipulation is a change in the genotype of germ cells;
- (4) The target of manipulation is germ cells, yet no genotype alteration is involved.

⁵ Cf. J. DANOWSKI, *Repetitorium dla kandydatów na akademie medyczne*, Warszawa: Oficyna Wydawnicza "Medyk" 1995, 80-81. The definition of euphenics included in the handbook *Podstawy genetyki*, *op. cit.* 117, is as follows: "Shaping the environmental conditions appropriate for a given genotype"

⁶ Cf. ŚLIPKO, *Granice życia*, *op. cit.*, 81.

⁷ Cf. N. AGAR, *Designing Babies: Morally Permissible Ways to Modify the Human Genome*, *Bioethics* 9(1995), nr 1, 1-15.

⁸ Cf. *ibid.*

⁹ Cf. M. LAPPÉ, *Ethical Issues in Manipulating the Human Germ Line*, in: *Bioethics. Basic Writings on the Key Ethical Questions that Surround the Major, Modern Biological Possibilities and Problems*, T. SHANNON (ed.), Mahwah 1994, 123-139. The author is a Philosophy Doctor and holds the chair of Medical Education in Illinois University, Chicago (USA).

¹⁰ Cf. *ibid.*, 130-131.

In 1982, Dr W.F. Anderson¹¹ proposed four categories of genetic manipulation, similar to the ones presented above, which have been adopted by a considerably large circle of authors¹² This division makes it possible - as it seems - to present a systematic and ordered classification of the objections which are raised against genetic engineering, as well as the basic arguments "for" and "against" genetic manipulation. The categories mentioned by Anderson are as follows:

(1) Somatic cell gene therapy: this would result in correcting a genetic defect in the somatic cells of a patient;

(2) Germ line therapy: this would require the insertion of a gene into the reproductive tissue or into an embryo at a very early stage of development¹³;

(3) "Enhancement" genetic engineering: this would involve the insertion of a gene to try to "enhance" a known characteristic; for example, the placing of an additional growth hormone gene into a normal child¹⁴;

(4) Eugenic genetic engineering: an attempt to alter or "improve" complex human traits, each of which is coded by a large number of genes; for example, personality, intelligence or character¹⁵

According to Anderson, the line between the ethical genetic research and the unethical one follows the division into the therapeutic and the non-therapeutic activity. While remaining a promoter of gene therapy insofar as the borderline between (1) therapy and (2) "enhancement" genetic engineering is possible to draw¹⁶, the author is at the same time an opponent of the later¹⁷ Holtung agrees with Anderson that the

¹¹ Dr W.F. Anderson is the Director of Gene Therapy Laboratories and Professor of Biochemistry and Pediatrics in Southern California University. Previously, he worked for the National Institutes of Health, in Bethesda, Maryland (USA).

¹² In presenting the particular categories I am referring to a later article by this author. Numerous authors refer to Anderson's classification - according to the available sources, he is probably a significant figure among the bioethicists dealing with genetic engineering. Cf. F. ANDERSON, Genetics and Human Malleability, *Hastings Center Report* 20(1990), 21-24; cf. also: by the same author: Human Gene Therapy: Why Draw a Line?, in: *Bioethics. Basic Writings, op. cit.*, 140-151; M.A.M. de WACHTER, Ethical Aspects of Human Germ-Line Therapy, *Bioethics*, 7(1993) nr 2-3, 166-167; R.V. LEBO, M.S. GOLBUS, Scientific and Ethical Considerations in Humane Gene Therapy, *Baillière's Clinical Obstetrics and Gynaecology*, 5(1991) nr 3, 697-713.

¹³ The first cells of an embryo are omnipotent, hence they may enter all the possible ways of development. Cf. Z. BIELAŃSKA-OSUCHOWSKA, *Jak zaczyna się życie człowieka* (How the Human Life Starts), Warsaw 1994, 44-45.

¹⁴ L. Walters holds that another sub-division should be introduced here: "enhancement" genetic engineering concerning (a) somatic cells; and (b) reproductive tissue. Cf. also "Editor's Introduction", *Journal of Medicine and Philosophy* 10(1985), 209-212.

¹⁵ The mentioned characteristics are inherited not monogenically, but polygenically. This means that they are not inherited by one pair of alleles, which additionally complicates the possibilities of therapy.

¹⁶ Cf. W.F. ANDERSON, Editorials: Uses and Abuses of Human Gene Transfer, *Human Gene Therapy* 3(1992), 1-2.

¹⁷ Cf. ANDERSON, *Human Gene Therapy, op. cit.*, 147.

essence of the problem lies in the precise definition of the difference between correcting a genetic defect and manipulation of the "enhancement" type. Yet showing a precise borderline here seems rather impossible. Indeed, inserting a foreign gene in the treatment for sickle cell anaemia is an example of a corrective therapy, but can the same be asserted as far as the treatment for left-handedness or colour-blindness is concerned, or in the case of genetic manipulation of the size of the patient's body organs on the grounds of his present dissatisfaction with their proportions? Preventive manipulation is also problematic. It could be attempted e.g. if the only possible defence against AIDS in the future was gene therapy applied to a healthy patient. Holtung ultimately takes the position in favour of the existence of the so-called "grey sphere" between genetic manipulation of the corrective and the enhancement type¹⁸ According to Harris, there is no moral difference between genetic treatment of a dysfunction and genetic enhancement of the functions of the organism, if this enhancement is to serve protection of life or health¹⁹

The conclusion that can be drawn from the attempts to classify genetic manipulation presented above is that the discussion on their ethical or unethical character takes place on different levels. Firstly, it must be decided which type of manipulation is concerned: whether the manipulation in question is therapeutic or extra-therapeutic. This will help us to answer the question what kinds of manipulation can be considered as therapy. Can therapy be understood merely as improvement of genetic defects, or does it also comprise "enhancement" of the human condition, which consists in correcting defects that are not directly illnesses (as it is the case with placing a growth hormone gene into a normal child)? The subsequent level is that of deciding whether the therapy in question concerns somatic cells or so-called germ line cells - gametes and very early developmental stages. Genetic manipulation concerning the latter type of tissue appears to be problematic from the point of view of its being ethical or unethical. The points for dispute that arise here concern the problem whether experiments on human embryos should be allowed, and consequently, the problem of the distortion of the sameness and the identity of the human person. Finally, the highest, and the most controversial discussion level concerns moral admissibility of such genotype enhancement which consists in projecting totally new features of the offspring. Ethical argument is relevant to all the succeeding discussion levels, and it is "assisted" on each particular level by the knowledge of the contemporary achievements of genetics. This does not, however, mean that ethical approach remains dependent upon genetic discoveries. The competence of ethics is of a

¹⁸ Cf. N. HOLTUNG, Human Gene Therapy: Down the Slippery Slope?, *Bioethics* 7(1993) nr 5, 406-407; cf. also: J. HARRIS, Is Gene Therapy a Form of Eugenics?, *Bioethics* 7(1993) nr 2-3, 181.

¹⁹ Cf. HARRIS, Is Gene Therapy a Form of Eugenics?, *op. cit.*, 184. In order to start a discussion with the author, we must firstly analyze what he understands as a malfunction of the organism, as well as the definition of health that he accepts. I am fully aware of the controversial nature of the theses that the quoted authors advance, yet the aim of this article is not to advance criticism of their views, but to present their arguments.

different nature than the one of genetics. As H. Mohr writes: one can easily point to the biological borders of medicine, yet the ethical ones can only be traced²⁰

II. Types of Ethical Argument

When the possibilities of contemporary genetics as well as the attempts at establishing a classification of genetic manipulation are known, it is easier to comprehend the disciple's dilemma: to be precise - to comprehend the arguments for and against genetic manipulation. On the other hand, these arguments as if "reveal" the ethical and anthropological presumptions accepted by the respective authors. However, these will not be the subject of discussion here.

While trying to classify the arguments used for and against germ line gene therapy, E.T. Juengst enumerates five of them which are traditionally used by its opponents as well as five others, presented those who defend it²¹ In the present article I will draw on the classification advanced by this author, yet I will modify it wherever it seems to be too narrow. Firstly, the arguments of the enthusiasts of genetic manipulation will be presented.

1. Arguments used by the proponents of gene therapy

1. Medical utility. Gene therapy of germ cells (or early developmental therapy) consists in actual correction of genetic defects, whereas somatic cell therapy can be only of palliative nature, that is, it can only ease the symptoms of a disease, without eliminating it. According to such authors as R. Munson and L.H. Davies, the development of germ-line gene therapy is a moral duty of medical science for two reasons. Firstly, it gives hope for overcoming the still existing "technical difficulties" in genetic engineering, and - secondly - one can point to cases in which its utility is obvious, such as e.g. when the prospective parents consider the killing of an unborn child bearing genetic defects as moral evil, or when homozygous²² parents are carri-

²⁰ Cf. H. MOHR, *Biologische Grenzen der Medizin*, *Zeitschrift für Medizinische Ethik* 41(1955), 3-8.

²¹ Cf. E.T. JUENGST, *Germ-line gene therapy: back to basics*, *Journal of Medicine and Philosophy* 16(1991), 587-592. Eric T. Juengst, Ph.D., is Program Director of Ethical, Legal and Social implications of Human Genome Research, in National Center for Human Genome Research, Institutes of Health (Bethesda, Maryland, USA). He is editing the program section on human genotype engineering in the magazine quoted above.

An interesting analysis of the arguments used in European literature can be found in the article by A. MAURON, J.M. THÉVOZ: *Germ-Line Engineering: A Few European Voices*, *The Journal of Medicine and Philosophy* 16(1991), 649-666.

²² Homozygotes are zygotes, which are formed by joining gametes carrying the same allele; homozygotes give so-called "clean/clear" lines of inheriting gene deficiency.

ers of the same gene deficiency²³ B. K. Zimmerman stresses that the moral obligation of the medical profession is to adhere to the principle that all medical manipulation is first of all to serve the interest of the patient. The definition of the "patient" includes - in the case of germ-line gene therapy - an unborn, or even not yet conceived child. We would be acting unethically if we stopped manipulation that could stop or prevent pathology²⁴ Another situation showing "obviousness of gene therapy" has been pointed to by R.V. Lebo and M.S. Golbus: in their opinion, transmitting defective genes means "condemning" the future generations to genetic diseases, which could be prevented by germ-line gene therapy²⁵

2. Medical necessity. Germ therapy strategies that effect the germ line may be the only effective ways of addressing some genetic diseases²⁶, hence their necessity.

3. Prophylactic efficiency. By preventing the transmission of disease genes, germ-line therapy would obviate the need to perform costly, risky somatic cell gene therapy in multiple generations. J. Fletcher, one of the first enthusiasts of the utility of genetic engineering, accepted germ-line gene therapy (or the therapy of early developmental stages) already in 1983, making its application subject to three conditions: (1) that the therapy turns out efficient both for the patients and for their offspring, at the same time saving them excessive pain, (2) that it is limited to the traditional aims of medical science, (3) that - in practice - it does not violate ethical codes accepted by the society²⁷

4. Respect for parental autonomy. Medicine should continue to accept, and respond to, a wide range of possibilities created by germ-line gene therapy, if only such is the wish of the prospective parents. The mentioned Lebo and Golbus stress that human dignity means the dignity of the rational nature, not of the biological one. Thus one cannot argue against gene therapy on the grounds of the possible distortion of a person's identity. Sometimes the rights belonging to man must be violated if the treatment requires so. In such instances, the society protects itself against abuse of medical assistance by means of the patient's formal agreement to the therapy in question. However, there are no arguments convincing enough to hold the thesis that potential offspring have any autonomy that could be violated here²⁸ The parents, on

²³ Cf. R. MUNSON, L.H. DAVIES, Germ-Line Gene Therapy and the Medical Imperative, *Kennedy Institute of Ethics Journal* 2(1992), 137-158.

²⁴ Cf. B.K. ZIMMERMAN, Human Germ-Line Therapy: The Case for its Development and Use, *The Journal of Medicine and Philosophy* 16(1991), 596.

²⁵ R.V. LEBOS, M.S. GOLBUS, Scientific and Ethical Considerations in Human Gene Therapy, *Baillière's Clinical Obstetrics and Gynaecology* 5(1991), nr 3, 697-713.

²⁶ Cf. also: ZIMMERMAN, Human Germ-Line Therapy, *op. cit.*, 597.

²⁷ Cf. J. FLETCHER, Moral Problems and Ethical Issues in Prospective Human Gene Therapy, *Virginia Law Review* 69(1983), 515-546; cf. also: ZIMMERMAN, Human Germ-Line Therapy, *op. cit.*, 597-598.

²⁸ *Ibid.*, 142.

their part, have a full right to genetic intervention - as it is the case with in vitro fertilization - if it can only ensure the health of their prospective child²⁹

5. Scientific freedom. Research aimed at developing techniques of germ-line gene therapy, wherever pursued within the bounds of accepted subjects research, is protected by the scientific community's rights to free inquiry. Knowledge is a result of scientific research which consists in penetrating the nature of things, and it is against the background of this knowledge that technologies are created. The process of transition from theoretical principles to their practical application requires an intermediate stage in which new technologies and methods are developed. Every big research project involves a number of unsuccessful attempts before a sufficient knowledge of the object is reached³⁰

2. Arguments Used by the Opponents of Gene Therapy

1. Scientific uncertainty and clinical risks involved by such therapy call for the feeling of responsibility for future generations. Although a person may agree to the risk involved by genetic manipulation performed on himself, taking this risk would not be so easily justifiable as far as the offspring are concerned. We must bear in mind the fact that the consequences of genetic manipulation are not totally predictable, e.g. there can be harmful mutations due to gene recombination deficiency. The advocates of genetic manipulation refer to the supposed duty of our generation, which is to improve the genetic endowment of the one to come, or at least to ensure that its genetic endowment is not worse than ours. However, this kind of requirement does not have to involve acceptance of genetic techniques - we do not know what phenotype changes will be determined by the environment in which the future generations will live. Genetic manipulation may help to conceal the genetic defects of one generation, yet these defects may be well disclosed in the succeeding one³¹ Therefore genetic engineering can be seen as "medically hazardous". Inserting a new gene into an existing genotype in the hope for its "improvement" may endanger the metabolic balance of the cell. Moreover, using genetic engineering may in practice lead to discrimination of patients. Three questions should be asked in this context:

(1) How to determine which genes should be provided? In the instances of serious genetic defects it is morally acceptable to use genetic engineering in the treatment of somatic cells, but how to distinguish a serious disease from a state that can be described as a feeling of discomfort rather than disease? Is the absence of the growth hormone, which results in a height of barely two feet, a genetic disease? And if so, how are we to determine the height borderline calling for therapy?

²⁹ Cf. ZIMMERMAN, *Human Germ-Line Therapy*, *op. cit.*, 595.

³⁰ Cf. *ibid.*, 598.

³¹ Cf. LAPPÉ, *Ethical Issues in Manipulating the Human Germ Line*, *op. cit.*, 129.

(2) How to determine who should receive the needed gene? If we agree that only a serious disease can be treated by means of genetic therapy, the answer to this question will be similar in nature to the well-known dilemmas concerning the distribution of special means (such as e.g. dialyzing of patients). The situation would look different, though, if the "deficient" gene was one enhancing memory. What are the arguments for grafting a patient such a gene? Should we take into consideration the patient's particular abilities, and the benefits for the society that they bring, or rather the lacks? Should we apply lots drawing while choosing the patient, or maybe, should a special price of such an intervention be established?

(3) How to prevent discrimination against individuals who do or do not receive the gene in question? Should workers employed in an industry critical for the national security who are exposed to harmful conditions be "endowed" with a gene protecting their health during the time of a national crisis³²? Has the society got the right to force parents who are aware of their genetic defects to undergo gene therapy in order to prevent their offspring from genetic anomalies? How to prevent creating of an "elite" to whom gene therapy would be accessible³³?

Anderson writes that genetic engineering lacks moral certitude, which means that it will remain a problem even if scientific progress excludes medical risk³⁴. The author points that it is not medical mistakes that disqualify the therapy; hence the reason for rejecting it does not concern the balance of profits and losses. Zimmerman, however, is of a different opinion arguing against germ-line gene therapy, and simultaneously hoping that biotechnology and its techniques will be elaborated together with the progress of science.³⁵ According to this author, elimination of risk is the factor deciding about moral admissibility of genetic intervention.

2. The Slippery Slope Argument. Acceptance of germ-line gene therapy involves the danger of gradual acceptance of the manipulation that aims at enhancement of human features. The essence of this argument (which is also used in relation to abortion, euthanasia and the FIVET) is that acceptance of a practice that initially seems purely innocent, ultimately leads to committing or approving of a morally blameworthy action. Both the argument and the gene therapy in question, have got both their proponents and opponents. J. Rifkin takes the position in favour of the slippery slope argument. He argues that once we have accepted techniques of genetic engi-

³² Cf. ANDERSON, *Human Gene Therapy*, *op. cit.*, 144-147.

³³ Cf. R. MUNSON, L.H. DAVIS, *Germ-Line Gene Therapy and the Medical Imperative*, *Kennedy Institute of Ethics Journal* 2(1992), 140-147. Though the authors ask the same questions as Anderson - this is why I have put their position among these of the opponents of genetic therapy - they arrive at different answers. The ambivalence of the arguments used, which will be addressed in the second part of the article, is revealed here. Munson and Davies distinguish three types of arguments against genetic manipulation, which concern: (1) violating individual rights of the patient, (2) violating the social order, and (3) violating natural law. None seems possible to hold for them.

³⁴ Cf. ANDERSON, *Human Gene Therapy*, *op. cit.*, 145.

³⁵ Cf. ZIMMERMAN, *Human Germ-Line Therapy*, *op. cit.*, 606.

neering, we will not find a logical reason why we should abandon their continuation at some point. If diabetes, anemia and cancer can be cured by means of a change in the genetic structure of an individual, why should genetic engineering not be used to eliminate other "defects of nature", such as short-sidedness or left-handedness³⁶?

3. Illegitimacy of research made on embryos³⁷ Even otherwise legitimate interventions in somatic cells have to be carried out at early stages of the embryonic development if they are to be successful; hence they involve illegitimate manipulation of human embryos³⁸ Genetic experiments ascribe the future generations the role of research objects, unconscious and unable to express their opinion³⁹

4. Utility of therapeutic possibilities. The therapeutic techniques of genetic engineering will never be effective enough to merit high social priority in the face of alternative approaches. The problem is, though, whether the high costs that genetic manipulation involves use the means which could otherwise be allocated to traditional therapy techniques. Zimmerman argues that germ-line gene therapy is not needed, and its utility is only temporary. The moment prenatal research, as well as the research on zygote selection before implantation, is completed, genetic techniques will turn out to be spurious⁴⁰ At this point one must notice the lack of coherence in the author's argument, as what he holds contradicts his thesis on the illegitimacy of embryonic research, which he mentions in point three. This additionally points to the fact that the problem of the moral status of the begotten life is logically an earlier one.

5. Integrity of genetic patrimony. Germ-line gene therapy (or early developmental therapy) violates the rights of the subsequent generations to inherit genetic endowment that has not been intentionally modified by the parents. The rights of a human individual, which result from the human dignity, include the right to original genetic

³⁶ Cf. J. RIFKIN, *Algeny*, New York 1983, 232. There is a broad literature on this argument. Since the framework of this article does not allow me to present a detailed description of the argument in question, I will confine myself to presenting a few bibliographical items, leaving the discussion until the next publication. Cf.: W. VAN DER BURG, The Slippery Slope Argument, *Ethics* 102(1991), 42-65; S. GOROVITZ, Progeny, Progress, and Primrose Paths, in: *The Ethics of Reproductive Technology*, K.D. ALPERN (ed), Oxford 1992, 117-127; N. HOLTUNG, Human Gene Therapy, *op. cit.*, 402-409; D. RESNIK, Debunking the Slippery Slope Argument Against Human Germ-Line Therapy, *The Journal of Medicine and Philosophy* 19(1994), 23-40; D. WALTON, *Slippery Slope Arguments*, Oxford: Clarendon Press 1992; B. WILLIAMS, Which Slopes Are Slippery, in: *Moral Dilemmas in Modern Medicine*, M. Lockwood (ed), Oxford 1985, 126-137.

³⁷ At this point, I am departing from Juengst's classification. The problem of the consent of the future generations, which he mentions in point 3, seems to be falling into the line of the problem of research made on embryos, and of the question of violation of the integrity of genetic patrimony.

³⁸ Cf. LAPPÉ, Ethical Issues in Manipulating the Human Germ Line, *op. cit.*, 125.

³⁹ Cf. J.M. VARAUT, *Możliwe, lecz zakazane. O powinnościach prawa*, transl. S. Szwabski, Warszawa 1996, 72-83.

⁴⁰ Cf. ZIMMERMAN, Human Germ-Line Therapy, *op. cit.*, 605.

endowment⁴¹ Genetic manipulation makes the offspring lose their identity. Hence it may lead to a situation in which the children lose the feeling of their "genetic belonging" This problem appears today in the context of the methods of reproductive technology⁴²

6. Distributive justice. The question is how to choose the persons who are to undergo the therapy, having taken its rather high cost into account. Among the mentioned authors, only Zimmerman⁴³ addresses this problem directly; it is not touched by Juengst, and many authors consider rather the danger of discrimination (see: point 1 of the argument). The problem of distributive justice has been referred to here in the form of a separate argument, as it seems a more fundamental question than the one of discrimination. Moreover, it directly concerns the formal structure of the arguments used in contemporary ethics, hence it deserves more attention.

As it has been demonstrated, the authors who are proponents of germ-line gene therapy refer most frequently to the beneficial results of therapy, making its moral legitimacy dependent on the overall balance of "benefits versus risks" The postulate of distributive justice breaks through the scheme of arguments used by consequentialists, since it stresses moral commitment towards particular individuals. Therefore the risk involved by particular manipulation cannot be justified by the good of the community - neither by the good of the present or of the subsequent one.

The arguments opposing genetic manipulation have been categorized more formally by A. Mauron and J.M. Thévoz. They distinguish between two essential classes of these arguments: (1) the pragmatic ones, based on the balance of benefits versus risks, or on the existence of alternative medical techniques, and (2) the arguments appealing to the basic human rights. This categorization deserves attention since it clearly addresses the reasons that stand behind the arguments⁴⁴ The approach that the authors show in the quoted article does not reach the deep basis of argumentation; yet they refer to still another author, namely, H. Jonas, stressing his influence not only on bioethics, but also on all the problems related to the development of technocratic societies. Jonas advances the opinion that the good and bad consequences of the application of the technologies are tightly bound together, since there is no gap between the possession of the new technologies and their application. They automatically "move" from the level of laboratory experiments to the utility one, and we are even unaware of the moment we lose control over them. Jonas observes that we must listen more carefully to the prophecy of disaster than to the one of happi-

⁴¹ Cf. WACHTER, Ethical Aspects of Human Germ-Line Therapy, *op. cit.*, 171.

⁴² Cf. R. CHADWICK, *Ethics, Reproduction and Genetic Control*, London 1987, 126-127.

⁴³ Cf. ZIMMERMAN, Human Germ-Line Therapy, *op. cit.*, 607.

⁴⁴ Cf. MAURON, THÉVOZ, Germ-Line Engineering: a Few European Voices, *op. cit.*, 652-653. A. Mauron, PhD, is Research Associate of Louis Jeantet Foundation for Medicine and Department of Biochemistry, University of Geneva (Switzerland). J.M. Thévoz, DD, is Research Associate of Louis Jeantet Foundation for Medicine and Faculty of Theology, University of Geneva.

ness⁴⁵ What we are threatened with is that the "product" that the sorcerer's disciple has made may start to follow its own course, one that the disciple has not foreseen...

3. Ambivalence of Arguments Used

Though the solution to the controversy about the moral legitimacy of genetic manipulation does not seem easy in many instances, the sorcerer's disciple will have to face still another difficulty, caused by the ambivalence of the arguments that are used here.

The representatives of various standpoints commonly refer to the feeling of responsibility for the subsequent generations. For some of them, this responsibility means trying - by all means - to eliminate genetic defects with the help of genetic engineering, while for others it means abandonment of the manipulation which can result in a change of the genotype identity. The representatives of both standpoints clearly state that they are directed by the well-being of the unborn child, and they unanimously declare their defence of the human dignity. However, the proponents of genetic manipulation accuse their adversaries of having too narrow understanding of the human nature. Violation of the identity of a rational person is not a result of violating the "genetic nature", as the enthusiasts of genetic techniques claim. The problem of the patient's autonomy appears in both groups of arguments - some authors ascribe the right to autonomy solely to the parents (since gametes are not persons), while others defend the autonomy and genetic identity of the offspring. The enthusiasts of genetic techniques find it difficult to decide who should be ascribed the status of the patient: on the one hand, genetic engineering is supposed to protect the health of the unborn child as a potential patient, while on the other, the parents are the "more privileged" patients, whose decision determines not only the actual use of therapy, but also even the diagnosis as to such a necessity. The apparently homogeneous arguments also comprise a significant divergence: some of the opponents of therapy involving genetic engineering techniques defend the standpoint which holds that human rights belong to the human person since the moment of conception, while others consider that therapy should be replaced with a negative selection of embryos with diagnosed genetic defects. Both standpoints consider the problem of the risk resulting from genetic manipulation. While some authors have been presenting apocalyptic visions of the destruction of the human nature, others coolly state that risk is inseparably attached to any domain of knowledge, including alternative medical therapy; what we are hence supposed to do is to make a reasonable calculation of the balance of benefits and losses"

⁴⁵ Cf. *ibid.*, 659; cf. also H. JONAS, *Das Prinzip Verantwortung: Versuch einer Ethik fuer die technologische Zivilization*, Frankfurt 1992, 70-73 (the Polish edition: *Zasada odpowiedzialności. Etyka dla cywilizacji technologicznej*, tłum. M. Klimowicz, Warszawa 1996, 70-73); by the same author: *Technik, Medizin und Ethik: Praxis des Prinzips Verantwortung*, Frankfurt 1985. Jonas's statement essentially corresponds to the "slippery slope" argument, although the author himself does not use this term.

Will any of the arguments be convincing enough for the disciple to give up his creative ambitions? Or maybe when he penetrates deeply into the mystery of his existence, when he understands what brings true joy, what causes sadness, what bears the marks of suffering, when he understands who he is he will be mature enough to make the right decision?

DYLEMATY UCZNIA CZARNOKSIEŻNIKA

Argumenty "za" i "przeciw" ingerowaniu w ludzki genotyp⁴⁶

(Streszczenie)

Rozwój genetyki molekularnej otworzył przed człowiekiem możliwości ingerowania w ludzki genotyp, które przed zaledwie półwiekiem pozostawały jedynie w sferze fantazji. Zastosowanie technik inżynierii genetycznej jest ambiwalentne: z jednej strony stwarza nowe szanse leczenia chorób uznawanych dotąd za nieuleczalne, z drugiej stanowi pokusę ingerencji o charakterze eugenicznym. Granica pomiędzy uznanymi za moralnie dopuszczalne a moralnie niedopuszczalnymi ingerencjami genetycznymi przebiega, zdaniem większości autorów, zgodnie z podziałem na działania terapeutyczne i pozaterapeutyczne. Podział taki nie rozwiązuje jednak wszystkich problemów. Po pierwsze, trudno wyznaczyć ostrą granicę pomiędzy obu rodzajami interwencji, po drugie zaś, ambiwalentny jest również charakter argumentacji odnoszonej "za" i "przeciw" genetycznym ingerencjom. Zarówno przeciwnicy jak i zwolennicy genetycznej terapii twierdzą, że występują w obronie ludzkiej godności i dobra nienarodzonych jeszcze dzieci. Wspólnie odwołują się też do poczucia odpowiedzialności za genetyczną kondycję przyszłych pokoleń. Powstający tutaj dylemat (nazwany w tytule artykułu dylematem ucznia czarnoksiężnika), wydaje się rozstrzygalny jedynie w perspektywie antropologicznej, tj. odpowiedzi na pytanie kim jest człowiek i co stanowi o jego osobowej godności.

⁴⁶ Polska wersja tego artykułu została opublikowana w: *Znak* 48(1996) nr 12, 50-62.