УДК 17.0, 403.44, 629.039.58 DOI 10.19163/2070-1586-2019-2(24)-53-58

ПРИМЕНЕНИЕ ИНТЕГРАЛЬНОГО ПОДХОДА В ЭТИКЕ РАДИОЛОГИЧЕСКОЙ ЗАЩИТЫ

Н. А. Подзолкова

кандидат философских наук доцент кафедры Гуманитарных дисциплин Озёрского технологического института – филиала Национального исследовательского ядерного университета МИФИ, Озёрск, NAPodzolkova@mephi.ru

А. А. Денисова

и.о. м.н.с. клинического отдела Южно-уральского института биофизики ФМБА России, Озёрск, clinic@subi.su

Основная задача данного исследования – продолжить открытый диалог между представителями атомной отрасли и заинтересованной общественностью по вопросам этики принятия решений в ядерной энергетике. Авторы рассматривают указанные проблемы с точки зрения интегральной философии и дифференциации уровней сознания. Исследование состоит из двух частей. Первая часть, публикуемая в настоящем издании, посвящена анализу этических платформ радиологической защиты населения и принципов биомедицинской этики с точки зрения уровневого подхода. Даётся сводная таблица отображения этических коррелятов радиационной безопасности и принципов биоэтики.

***Ключевые слова**:* этическая платформа, биомедицинская этика, радиационные риски, уровни сознания, интегральная философия.

APPLICATION OF THE INTEGRATED APPROACH TO THE ETHICS OF RADIOLOGICAL PROTECTION

N. A. Podzolkova

PhD, associate professor of Department for of humanitarian disciplines of Ozyorsk Technological Institute – branch of the National Research Nuclear University «MEPhI», Ozyorsk, NAPodzolkova@mephi.ru

A. A. Denisova

acting junior researcher/interpreter of the clinical department of the Southern Urals Biophysics Institute, FMBA of Russia, Ozyorsk, clinic@subi.su

The main objective of this study is to continue an open dialogue between representatives of the nuclear industry and the interested public concerned about the ethics of decision-making in nuclear energy. The authors consider these problems from the perspective of integral philosophy differentiating levels of consciousness. The study consists of two parts. The first one described in this paperis aimed to analyse ethical platforms of radiological protection and the principles of biomedical ethics using the level approach. The summary table of ethical correlates of radiation safety and principles of bioethics is presented.

Key words: ethical platform, biomedical ethics, radiation risks, levels of consciousness, integral philosophy.

Integral philosophy has been gradually formed in modern discourse originating from the global evolutionism of A. Bergson and P. Teilhard de Chardin, moving through psychological theories of personality development stages (J. Piaget, L. Colberg) and finally arriving to integral psychology (K. Wilber). A more rigorous mathematical substantiation of the integral approach was developed through such synthetic approaches as the calculus of forms (L. Kauffman, J. Spencer-Brown) and second-order cybernetics (H. Foerster, «Cybernetics of Cybernetics»). A special role in the development of the spirit of integration was played also by the Russian philosophy of allunity (V.S. Solovyov, P.A. Florensky, N.O. Lossky), which at the end of the twentieth century emerged from oblivion and evolved into a cause celebre around the world.

In modern biomedical ethics, there are approaches that use the concept of levels of consciousness of the integral philosophy. For simplicity we differentiate only between two such levels, naming them conditionally «Small I» and «Big I». We use the descriptive definition of V.I. Moiseyev: «Anything tolerable for Small I Big I can tolerate as well (the point of inclusion of Small I into Big I). In the meantime, there is such suffering that Big I can endure, but it can't be endured by Small I (the point of distinguishing Big I from Small I)» [1]. The integral approach allows for the existence of Small I, and Big I, either in different people or at different times in the same person. The transformation of Small I into Big I is also possible. We have made an attemptto have a look at the basic ethical paradigms from this perspective.

Basic ethical theories

Levels of consciousness are directly related to discussions of radiological protection principles and the correlation between these principles and principles

of biomedical ethics. A lot of contradictions arise because of the lack of a level approach to the problem. Some of the ethical principles are successfully implemented, figuratively speaking, at the level of the Small I, while the others are more relevant to the level of *Big I*. The same pattern could be observed for the principles of radiological protection.

We consider three types of ethical theories: consequential, deontological and theories of virtue.

Consequentialism (from Latin consequens – «consequence, conclusion, result») is a group of moral theories holding that a criterion for moral judgement is a result (consequence) of one's conduct. Thus, from the consequentialist standpoint, there will be a moral act that produces a good outcome as a result or consequence. Historical forms of consequentialism were eudemonism, hedonism, utilitarianism (the greatest happiness for the greatest number of people) and reasonable egoism. Consequentialism can also be called teleologism in ethics (from the Greek τέλειος – «final, perfect, target»), because in accordance with this ethical theory a goal is more important than means used to achieve it. For this group of theories the transformation of the *Small I* is not necessary.

Deontology is literally «the science of duty». The term was introduced by J. Bentham in «Deontology or The Science of Morality» to denote the ethics theory and morality in general. Later, the concept of «deontology» narrowed down to define a group of ethical theories, considering particularly the «sense of duty» as a moral basis. At the same time, duty can be understood either as the inner essence of a person reflecting the Kant's categorical imperative, which is a result of *Small I* transformation into *Big I*, or as an external normative rule that can not be transgressed – and then it is possible to act effectively at the level of *Small I* (for example, medical deontology).

Medical deontology entirely falls within the framework of understanding obligation as an external rule; otherwise it would be too subjective and could not regulate the activity of medical specialists. It is also important to note that the subject of the study of medical deontology is larger than the subject of ethical deontology, since, along with studying morality, it studies and regulates an interaction between a doctor and society (state), patients and their relatives, other doctors and medical personnel. So medical deontology includes the following areas: issues of compliance with medical secrecy; measures of responsibility for patients' life and health; problems of relationships within medical community; problems of interactions with patients and their relatives; rules applied to sexual contacts in doctor-patient relationships. *Vertue ethics* while judging the morality of conduct focuses on moral qualities of a person rather than on consequences of actions or non-actions. In order to act virtuously a person must *first* have such an important quality as virtue («zhen», righteousness, etc.), and *then* his actions will be underpinned with this quality and become moral. Moral actions are actions performed by a virtuous person, and not vice versa. Obviously, this approach involves transformation of a personality from *Small I* to Big I.

In some situations, all three ethical platforms can be exhibited in the same actions, but motives for these actions will be fundamentally different.

Ethical platforms of biomedical ethics principles

On the one hand, biomedical ethics might be considered as a specification of general medical ethics originating from Hippocrates; on the other hand, there is a significant difference distinguishing the former from the latter which is the transdisciplinary character of biomedical ethics [2]. Bioethics involves a variety of human activity dimensions: medicine, biology, law, politics, the military industry, technical and human sciences (psychology, philosophy), etc. Every year a number of problems falling within its competence increases. That is why to develop ethical strategies ICRP (International Commission on Radiological Protection) developed its ethical strategies based on principles of biomedical ethics by T. Beauchamp and J. Childress: respect for patient autonomy (Dignity); non-maleficence meaning «above all, do no harm» adopted from Hippocrates (Non-maleficence); beneficence defined as doing good to others following moral obligations (Beneficence); justice meaning fair distribution of advantages and disadvantages among groups of people (Justice). But if for medical specialists all these principles fall within the scope of external deontology, therefore they are to be fully complied with, in the field of radiation protection such unambiguous interpretation is not always possible.

Moreover, adjusting the principles to radiological protection context is still ongoing. Thus, in 2017 Annals of ICRP provided an updated list of principles of bioethics listing the combined principle of beneficence / non-maleficence, the principle of autonomy, the principle of justice and a newly presented *principle of prudence* [3].

The principle of prudence migrated to ethics from the principles of radiation safety (justification, optimization, limitation) which are discussed below. One of the leading experts of the ICRP, Abel Gonzalez, believes that this principle covers the whole system of radiation safety regulations, being the fourth and the most important practice-applied principle. Indeed, prudence is related to specific activities rather than to a common moral rule [4]. Apparently, there is a difference in understanding the concept of prudence. When it comes to *a practice-applied principle*, prudence means system thinking skills, abilities for logical reasoning enabling predictions of event outcomes, common sense essential fordeveloping a system of safe use of radiation in all spheres of human life. Speaking about prudence as *an ethical principle*, we

imply that a person who takes decisions on radiation safety faces a moral dilemma. A specific feature of the industry is that many processes are not yet clear, what means that extrapolation is not feasible, and in addition, it is impossible to control of certain environmental factors (meteorites, tsunamis, earthquakes) and guide social psychology (human factor). And this means that there is a need for *a renewed ethical value* that is prudence (intuition, wisdom, foresight) that does not originate from previous experience, but allows to make best decisions in situations of information deficit and hold responsibility for these decisions.

It is important to understand that an ethical principle and an ethical value are not the same concept although the boundary between the two is vague. A principle denotes a general rule: *do like that*, and a value emphasizes the importance of nurturing or cultivating in one's character some quality (kindness, obedience, modesty, etc.): *be this way*. Thus, prudence-foresight is not a principle, but rather a value. We can not demand from a person of turning on intuition, looking into the future; but we can impel him to transform his consciousness and to develop a higher level of the inner I which will possess a quality of prudence unavailable for Small I.

A Swedish philosopher Sven Hanson proposed a beautiful analogy for better understanding the ethics of virtue: a compass [5]. Obviously, to make a compass work a pole attracting an arrow is needed. Only in ethics, this pole is located not outside, but deep inside a personality being an attractorof Big I, that discovers new horizons for cognitive possibilities for a person, with the targeted prudence among them. Thus, we may observe first indications of a correlation between prudence as an ethical value in radiation protection and ethics of virtue.

Now we consider the ethical platforms of the remaining principles.

Despite its youth the majority of authors set *the principle of respect for the autonomy of an individual (Dignity)* at the top of the list of the principles of biomedical ethics. This could be expected, since those properties which are acquired the latest during the evolution are usually the most vulnerable and are most valued as well (cf. mind in biota, spirituality in society). The autonomy of a person is a rejection of a traditional paternalistic model in which a doctor concludes what is good for a patient (how a father decided what was better for his child, and a monarch decided what was better for his people). According to the principle of respect of the autonomy of an individual, a reliable ethical decision is based on mutual respect of a doctor and a patient and their active joint participation in this process, which requires *competence*, *patient awareness* and *voluntary decision-making*. The ethical basis of the principle of individual autonomy is the recognition of its independence and the right to self-determination. This is an advanced payment that we make to anyone, assuming that any person already has or at least can have *Big I* and is able to bear the burden of choice. In fact, most procedures that implement the right of autonomy are still nominal: patients are burdened by the need to choose, while physicians get angry because of the need to explain every recommendation and agree them with patients; the public expects the government and scientists find a way to protectthem from the nuclear threat, while scientists are burdened by the need to reveal 'blind-spots' in knowledge to the publics. However, even still being nominal the principle of autonomy is a huge step forward in building favorable setting for transformation of consciousness.

Once Immanuel Kant postulated a future principle of autonomy as a variation of the categorical imperative definition: *«Act in such a way that you treat humanity, whether in your own person or in the person of any other, never merely as a means to an end, but always at the same time as an end»*. Since the emphasis is placed on some unconditional virtue, potentially existing in any person, then this principle, as well as prudence-foresight, should be attributed to the ethics of virtue.

The principle of justice refers to the deontological group, because its core is a certain type of obligation: *everyone should receive as much as it is owing to him.* And since the existing criteria for the distribution of a limited resource do not take into account the internal hierarchy of consciousness, but are applied based on external parameters (equality, reasonable needs, vital needs, market exchange), that can be taken into account and put into words, then, of course, about it relates to external deontology.

Finally, let us talk about the principles of «non-maleficence» and «beneficence». The tendency to be combined as a single synthetised principle of «beneficence / non-maleficence» indicates an attempt to stay within the framework of external deontology traditional for medical ethics. However, in our opinion, this will be a simplification of the situation and stepping back from already positions gained on the way to a 'deeper' human morality. A considerable difference is observed between the minimum required principle of «non-maleficence», which can be considered as the starting point forany moral relationship, and which requires following the positive principle of «beneficence», that is not universal. If «beneficence» were our duty, we would not survive even one day, having given away all our property, as well as all available healthy organs to those people who need them. Fortunately, «beneficence» is a choice of our free will, which is manifested as another version of the categorical imperative: *«Act only according to that maxim whereby you can at the same time will that it should become a universal law»*. Only the deeper level of *I*, which comprises the requirements of this

imperative, is able to do good in a responsible manner *without imposing its will and its values upon other people*. If the principle of «beneficence» remains a prerogative of purely external deontology, then it inevitably degenerates into a paternalistic «good by force».

Thus aimimg to simplify the general concept the ICRP still keeps the unconscious paternalistic tendency of the scientific community to distrust the publics and limit activities of all stakeholders by compliance with rigid external regulations, what becomes an obstacle for a constructive dialogue in the public sector.

Principles of radiation protection and their relevance to the principles of bioethics

In this section we consider the basic principles of radiation safety aiming to justify their use with ethical grounds and to analyze their relevance to the principles of bioethics [6].

The principle of justification implies any use of radiation must be forbidden if the benefit a person / society receives from it is below the risk of potential harm caused by radiation. Once risk-weighing is involved in this standpoint, then the principle should be referred to the platform of utilitarianism. For this platform Sven Ove Hansson offers the balance as a metaphor for weighing [5]. To make a moral judgement on actions that one can choose between, benefit and harm associated with each of the alternatives should be specified and weighted, and the one having the largest benefit should be chosen. Interestingly, radiology has an emphasis on banning alternatives that do more harm, but, in fact, this means approval of alternatives that give more benefit. For public approval, this wording of the statement seems to be more strict and safety ensuring, but *any utilitarian approach agrees to refund expenses in advance*, since following this approach a goal is of higher importance than the means used to achieve it. Note that *there are no consequentialism-based principles in bioethics,* reflecting that the principle of justification has no links with bioethics.

The principle of limitation implies that the requirement to keep radiation exposure doses / dose rates within individual limits set by the Federal Laws of the Russian Federation and the current Radiation Safety Standards should be followed by all organizations and individuals responsible for levels of radiation people are exposed to. This is utterly a deontological principle of prohibition that unambiguously correlates with the non-maleficence principle. This is the minimum that is obligatory and must be abided by those who have been authorized to make decisions.

The principle of optimization implies that both individual and collective radiation doses must be kept at the lowest possible and achievable level (below the limits set by the current regulations) which takes into account social and economic factors (*«as low as reasonably practicable»,* the ALARP principle). The prohibition imposed by this principle is no longer as strict as the prohibition imposed by the limitation principle since someone must take into account a variety of factors and choose the best option. But this option should be the best not *for the business* (as it is in the case of utilitarianism), but it should be *as harmless as possible for an individual* (as far as real circumstances permit). This means that even if all regulations of the Radiation Safety Standards are abided and reduction of radiation dose limits is not economically beneficial, but the real conditions *allow* doing this, then the optimization principle *obliges* to level down the limits. But since the concept of «real circumstances» is rather subjective and very close to the principle of justification, this principle could be attributed to conscience of responsible people. This moves the discussion of the issue from the field of external obligation to the area of internal obligation for which *empathy* rather than rationality is required. Thus, the optimization principle is based on the ethical principle of «beneficence» and assumes that the level of consciousness of *Big I* is involved in making decisions that are to be implemented in practice.

The principle of prudence has been widely discussed in this paper and various ways to interpret it have been provided. Therefore it is sufficient to mention that similarly to the above described optimization principle, prudence considered in the framework of the systems approach to addressing tasks of radiation safety falls in the sphere of internal deontology and corresponds with the bioethical principle of beneficence. What is now known as eco-consciousness that is aimed to be developed in a living generation of humans is practical prudence. The need to take care about future generations and the environment and behave wisely regarding their future wellbeing what assumes that our consciousness is at a high level typical forBig I. However, the reason for prudence here is not a specific aspect of foresight, but rather a systems approach to human thinking available for every sensible person and a sufficient level of competence in an individual's area of expertise.

Even a sketchy linking of the radiation protection principles to bioethics principles, we face the need of finer gradation of ego-levels than the simple Small I and Big I. The example of different meanings of prudence, demonstrates that prudence-foresight requires addressing to deeper levels ofI compared to systems approach based prudence, however both require contribution of Big I. Stillfor purposes of this paper a more detailed analysis will make the understanding of the general trend more difficult, that is why the suggested pattern should be interpreted by readers as tentative and further analyses and discussions are needed to achieve better understanding of the issue.

Summary of radiation safety principles in relation to ethics platforms and concepts

Table 1

Summarizes basic ethics platforms, principles of biomedical ethics and ethics of radiation protection employing the level approach

Ethical platforms (paradigms)	Consequentialism / Teleology (the ethics of the result)		Deontology (ethics of duty)		Virtue Ethics (the ethics of the act of a virtuous person)
	Eudemonism, hedonism, reasonable selfishness (ethics of personal happiness)	Utilitarianism (ethics of public benefit)	Duty as an external rule	Duty as an internal rule	
Basic principle of the ethical platform	Steady pleasure, minimizing the negative consequences	The greatest benefit for the greatest number of people	External compulsion to follow a generally recognized rule or norm	The inner urge from the conscience to follow the moral law	Transformation of acts into virtuous ones due to the initially high ethical level of personality
Required for the ethical platform level of I	*Small I*	*Small I*	*Small I,* conscious of its limitations	*Big I*	*Big I*
The aphoristic expression of the ethical platform in the space of culture	Take every-thing from life!	The ends justify the means	The road to hell is paved with good intentions	*Freedom* is the *consciousness* of *necessity* (Benedikt Spinoza, Karl Marx)	First you need to transform the person, then only the cases will follow (Martin Luther)
Symbols of ethical platforms by Sven Henson		«The balance» (weighing)	«The fence» (a limit)		«The compass» (orientation)
The «classical» principles of bioethics (T. Bichamp, J. Childres)			The principle of non-maleficence The principle of justice	The principle of beneficence	The principle of respect for patient autonomy (Dignity)
Principles of bioethics adapted by ICRP			The principle of beneficence/non-maleficence The principle of justice		The principle of respect for patient autonomy (Dignity) The principle/value of prudence (in the meaning of «foresight»)
Principles of Radiation Protection and Safety		The principle of justification	The principle of limitation	The principle of optimization The principle of prudence (in the meaning of «systems approach»)	

ЛИТЕРАТУРА

1. Моисеев В.И., Плютто П.А. Биомедицинская этика. – СПб.: Издательский дом «Міръ», 2011. – С. 18.

2. Кияценко Л.П., Моисеев В.И. Философия трансдисциплинарности. – М.: ИФРАН, 2009. – С. 22–24.

3. Этические основы системы радиологической защиты // Труды МКРЗ. Публикация МКРЗ 1XX – МКРЗ 4825-7258-6046, 20 апреля 2017 г.

4. Гонзалес А.Я. Аргентинский подход к радиационной безопасности: его этическая основа. Наука и техника ядерных установок. 2011, ID статьи 910718. – С. 15.

5. Ханссон С.О. Этика и радиационная защита // Радиологическая защита. – 2007. – № 27.– С. 147–156.

6. Лошар Ж., Кул Д., Клемент К., Романов С., Подзолкова Н. Этические основы системы радиологической защиты: презентация // Доступна участникам

международ. общественного форум-диалога «AtomEco-2017». – Москва, 21 ноября 2017.

REFERENCES

1. Moiseev V.I., Plutto P.A. Biomedical Ethics. – St. Petersburg, 2011. – P. 18.
2. Kiyashchenko LP, Moiseyev V.I. Philosophy of transdisciplinarity. – M., 2009. – P. 22–24.
3. Cho K-W, Cantone M-C, Kurihara-Saio C, Le Guen B, Martinez N, Oughton D, Schneider T, Le Guen B, ZöLzer F. ICRP Publication 138: Ethical Foundations of the System of Radiological Protection. Annals of the ICRP 2018, 47(1):1–65.
4. Gonzalez A.J. The Argentine Approach to Radiation Safety: Its Ethical Basis. Science and Technology of Nuclear Installations. 2011, Article ID 910718. – P. 15.
5. Hansson S.O. Ethics and radiation protection // J. Radiol. Prot. – 2007. – № 27. – P. 147–156.
6. Lochard J., Cool D., Clement C., Romanov S., Podzolkova N. Ethical foundations of the radiological protection system // Available to the participants of the international public forum-dialogue «AtomEco-2017», Presented in Moscow on November 21, 2017.

УДК 614.258.1 DOI 10.19163/2070-1586-2019-2(24)-58-60

ФОРМИРОВАНИЕ ЭТИЧЕСКИХ ПРИНЦИПОВ У СТУДЕНТОВ НА КАФЕДРЕ ТЕРАПЕВТИЧЕСКОЙ СТОМАТОЛОГИИ ВОЛГГМУ

Н. В. Питерская

кандидат медецинских наук, ассистент кафедры терапевтической стоматологии, Волгоградского государственного медицинского университета, Волгоград, ORCID: 0000-0002-6250-833, piterskij.k@yandex.ru

И. В. Старикова

кандидат медецинских наук, ассистент кафедры терапевтической стоматологии, Волгоградского государственного медицинского университета, Волгоград, ORCID: 0000-0003-0202-5220, radyshevskaya@mail.ru

Т. Н. Радышевская

кандидат медецинских наук, ассистент кафедры терапевтической стоматологии, Волгоградского государственного медицинского университета, Волгоград, ORCID: 0000-0002-0150-9082, radyshevskaya@mail.ru

Обучение студентов деонтологическим принципам является ключевым моментом в формировании будущего доктора, т. к. профессия врача требует серьезного отношения к выполнению своих профессиональных обязанностей, внимательного, доброго отношения к пациентам. На кафедре терапевтической стоматологии ВолгГМУ накоплен большой опыт работы по формирование этических принципов у студентов. В статье освящены основные направления этой работы: активные и интерактивные методы обучения, привлечение студентов к практической работе и т. д. Личный пример и профессионализм преподавателя помогают общению и умению правильно выстроить диалог с пациентом, формируют у студента чувство уверенности в выполнении врачебных действий. Будущему врачу надо уметь анализировать свою работу, правильно оценивать и быть ответственным за качество выполненной работы. Формирование высокообразованной, гармоничной личности врача зависит от уровня его профессиональной подготовки, квалификации, использовании деонтологических принципов в своей работе.

Ключевые слова: деонтология, этические принципы, обучение в медицинском вузе, студенты.

THE FORMATION OF ETHICAL PRINCIPLES IN STUDENTS AT THE DEPARTMENT FOR THERAPEUTIC DENTISTRY, VOLGOGRAD STATE MEDICAL UNIVERSITY

N. V. Piterskaya

Candidate of Medical Science, assistant of the Department of Therapeutic Stomatology, Volgograd State Medical University, Volgograd, ORCID: 0000-0002-6250-833, piterskij.k@yandex.ru

I. V. Starikova

Candidate of Medical Science, assistant of the Department of Therapeutic Stomatology, Volgograd State Medical University, Volgograd, ORCID: 0000-0003-0202-5220, radyshevskaya@mail.ru