July–December 2023 Volume 2 Issues 3 & 4

SCIENCE, ART and RELIGION

# SCIENCE, ART and RELIGION

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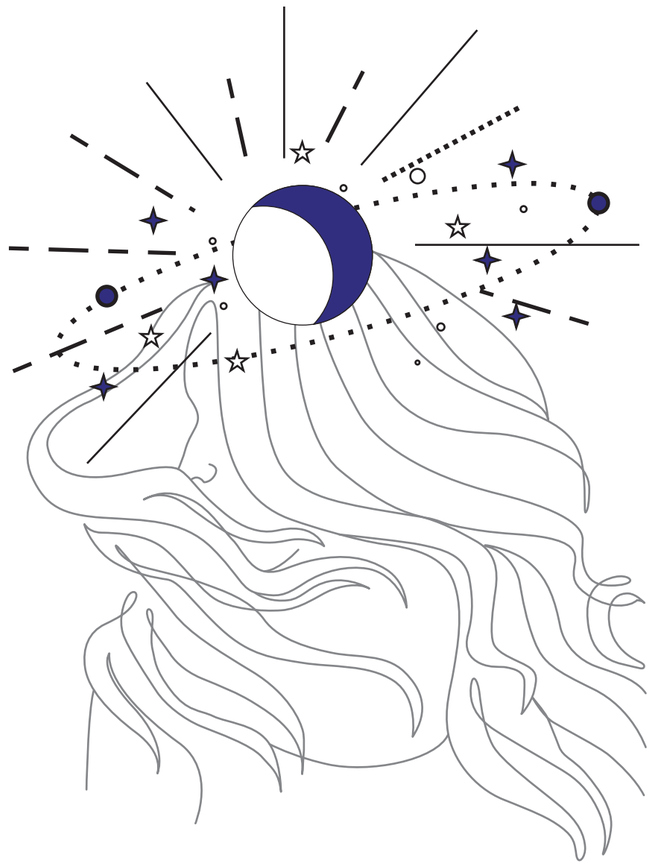

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# Science, Art and Religion

Volume 2 Issues 3–4 July–December 2023


**INTERNACIONALNA AKADEMIJA NAUKA I UMJETNOSTI U BOSNI I HERCEGOVINI**

**INTERNATIONAL ACADEMY OF SCIENCE AND ARTS IN BOSNIA AND HERZEGOVINA**


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# Science, Art and Religion

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# EDITORIAL

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We continue with the regular publication of the journal *Science, Art and Religion* (SAR), namely with issues 3 and 4, in 2023. The journal maintains its interdisciplinary profile, paying special attention not to engage in political debates. In the last two issues the policy of publishing papers from renowned professionals in their field with wide international experience and recognition has been carried on. In this issue accordingly, they contributed to the SAR journal with their manuscripts mainly upon invitation of the editor-in-chief. In this double issue, among others, I highlight the following topics: Corruption and Ethics in Health Care as a Global Problem; Behind the New "Iron Curtain", the West versus the Rest; Ecology in Judaism; Ethics and Ecology; Pregnancy, Childbirth and Religion in Bioethical Education: One Proposition, A New Method in Cardiovascular Rehabilitation: Look at the Future, About Better World and How to be a Great Communicator.

We live in extremely complex times and circumstances, and it is difficult to remain calm and wise with all surrounding events: from environmental problems, corruption, censorship or public ignoring of major and obvious failures in management of the global situation. Our times are also characterized by the predominance of the pure material over the spiritual and holistic, which is attributed to the historical introduction of Darwin's theory of the origin of species in science. Recently, debates were open on problems in medicine, especially those pointing to the role of pharmaceutical institutions, production and marketing of drugs and vaccines both from the point of inadequate independence and control over the process by states and regulation authorities as well as from the point of usefulness in the context of integrative medicine approach. A very interesting article by an American author was published recently in which he discusses the concept of medicine and the Bible. Namely, the author writes about how the concept of medicine is not mentioned in the Bible except in the proverb 17.22 "A cheerful heart makes good medicine, but a broken spirit dries up the bones." Where the meaning of "medicine" is outside the pharmacological domain. Moreover, in the Greek source "medicine" is described as pharmakeia and in the English translation of the Bible the terms *pharmacy, pharmacist* always appear as something negative, associated with idolatry and sorcery. Thus, for example, in the 5th chapter of Galatians, in describing the evil deeds of a sinful nature, I quote "Deeds of a sinful nature are obvious: sexual immorality, impurity and debauchery; idolatry and witchcraft; hatred, discord, jealousy, tantrums, selfish ambitions, dissensions, dissensions and envy; drunkenness, orgies and the like. I warn you, as before, that those who live like this will not inherit the kingdom of God (Gal 5:19-21). The Greek word pharmakeia is translated here as "witchcraft", right next to "idolatry". I wonder why the translators did not consider the word "medicines" to be the correct translation?"

Finally, this double issue provides scientometric data from the members of IANUBIH Academy, knowing that SAR is the official IANUBIH journal. The presentation shows the scientific, artistic and professional activity of the members of the Academy and illustrates the strength of its members. Namely, the members of the Academy, in addition to their impressive scientific/professional and artistic careers, also held responsible positions in the politics of science and education not only in their home countries, but also in the world's scientific institutions and academies. With this presentation, we want to encourage IANUBIH members to enrich the journal with their contributions in the coming period.

**Krešimir Pavelić**
Editor-in-Chief
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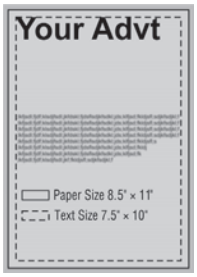


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REVIEW ARTICLE

# Corruption and Ethics in Health Care

Borislav Petrović[1], Bojan Dobovšek[2]

## Abstract

Corruption risks and corruption in health care remain a global problem to which Bosnia and Herzegovina (BiH) is not immune. It is similar all around the world, which is why we exposed the problem of corruption in health care in this article. Desk research and a literature review indicated that four forms of corruption and corruption risks prevail in health care. These are corruption and corruption risks arising from cooperation with manufacturers/distributors of medicines and medical devices, corruption and corruption risks in the field of public procurement, corruption and corruption risks in the intertwining of public and private practices, and corruption and corruption risks relating to waiting lists. There is a high probability that systemic corruption is present in the health care system. To limit corruption and corruption risks, the most effective approaches are to increase the transparency of the health system and hold key actors accountable; a centralized public procurement system must be implemented as well as proper waiting line management. In the end, some solutions are proposed.

**Keywords:** Bosnia and Herzegovina, Corruption, Corruption risk, Health care, Medicine.

## Sažetak

Rizici od korupcije i korupcija u zdravstvu ostaju globalni problem na koji ni Bosna i Hercegovina nije imuna. Slično je širom svijeta pa smo u ovom članku osvjetlili problem korupcije u zdravstvu. Sekundarna istraživanja i pregled literature pokazali su da u zdravstvu prevladavaju četiri oblika korupcije i korupcijski rizici. Riječ je o rizicima korupcije i korupciji koja proizlazi iz saradnje sa proizvođačima/distributerima lijekova i medicinskih sredstava, rizicima korupcije i korupcije u oblasti javnih nabavki, korupciji i korupcijskim rizicima u preplitanju javnih i privatnih praksi i korupcije, te rizicima korupcije koji se odnose na liste čekanja. Velika je vjerojatnoća da je sistemska korupcija prisutna u zdravstvenom sistemu. Kako bi se ograničili korupcijski rizici i korupcija, najefikasniji pristupi su povećanje transparentnosti zdravstvenog sistema i pozivanje ključnih aktera na odgovornost, a mora se implementirati centralizovani sistem javnih nabavki kao i pravilno upravljanje redovima čekanja. Na samom kraju se predlažu neka od rješenja.

**Ključne riječi:** Korupcija, Rizik od korupcije, Bosna i Hercegovina, Zdravstvo, Medicina

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## Introduction

We all want decent and affordable health care. To achieve this, we need a well-organized system, legislation, experts and financial resources. There is a lot of money involved in health care. Therefore, public health is attractive to those who would like to make a lot of money, even if it is in an illegal way. Ethics is an integral part of medicine, like human anatomy, or as the World Manual of Medical Ethics puts it, the physician encounters questions of values and obligations as often as he encounters professional questions of a scientific and technical nature.[1] A certain higher level of ethics, moral standing, and integrity is expected of the physician, as well as his support team of nurses, administrative staff, and others. Perhaps this is precisely why corruption scandals in health care resonate so much with the public because the disappointment is somehow greater. In addition, the damage to society or just an individual can be much greater than in some other professions for two reasons. The first is because health systems are often financially complex and rich, and therefore, even a small amount of corruption in them means

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significant financial damage to the state.[2,3] In addition, the health sector is particularly sensitive to the risks of corruption and corruption. As Savedoff and Hussmann[4] write, no other sector has such a special mix of uncertainty, information asymmetry, and a large number of dispersed actors. The health sector is a sector in which large funds flow. It is also closely related to the pharmaceutical and medical products industry, which are also financially extensive.[5] Because of the aforementioned characteristics, the resulting susceptibility to corruption is an inherent characteristic of health systems, and corruption and corruption risks in health care undoubtedly deserve attention.

The goal of the work was to list all the sources we managed to find regarding the forms of corruption in health care. So, specifically investigate how frequent the risks of corruption are, where manufacturers/agents/suppliers of medical equipment and pharmaceutical companies approach doctors, how frequent bribery of doctors is, how big a problem public procurement is, etc.[6]

Corruption in health systems and health care, despite a long history of warning about it and dealing with it, remains a strong global problem,[7,8] which in itself is an indication of her strength. Even if publishing on the topic itself will not solve the problem, hopefully, it will shed enough light on it so that the steps toward solving it are reasonable, logical, empirically supported and, as Vian[8] puts it well, taking into account (local) context.

According to Transparency International, of the $7.5 billion spent on health care each year, $500 billion is lost to corruption. That is why the fight against corruption in health care is crucial if the world is to effectively respond to current and future global health threats and provide quality health care for all. Bosnia and Herzegovina (BiH) is one of the countries with widespread and deep-rooted corruption. The Corruption Perception Index of Transparency International rated BiH at 38 (More on: https://ti-bih.org/wp-content/uploads/2022/04/Analiza-11_9_2019-2.pdf). This rating indicates a high level of corruption in the country. The health care sector is highlighted, given its scope and complexity, which faces extremely high risks of corruption. Citizens' perception of widespread corruption in the health care sector is also entrenched. In general, the high level of corruption in the country strongly affects the functioning of the health sector. The emerging forms of corruption in the health sector, which include bribery in the provision of health services, in public procurement procedures, and clientelism in the procedures for appointing management and distributing jobs, are essentially no different from the emerging forms of corruption in other areas. However, it is necessary to keep in mind that in terms of consequences, the presence of corruption in the health care sector often has direct implications for people's health and lives. Therefore, it can be concluded that the inefficient and dysfunctional health care system is largely a consequence of widespread and deep-rooted corruption. That is why the focus of this article is on corruption and health care.

## Defining the Evil

If the complexity of defining organized crime is defined by the elephant analogy, the giraffe analogy is used to define corruption—we all know what it is when we see it, but it is hard to describe. Therefore, it is not surprising that there are opinions about the definition of corruption, and it is often written about.[9–11] The definitional complexity of corruption is shown above all in the rather large variety of perceptions of what corruption is, which is reflected in a large number of definitions of corruption. Therefore, giving and receiving bribes is seen as an unambiguously corrupt act, that is, financial benefits in exchange for certain benefits to the bribe giver, and where the financial benefits given may be disguised as gifts of high value. Less obvious and, therefore, less often considered corrupt behavior are practices of mutual rewards, for example, employment in a certain workplace and the expectation of a certain mutual return of favors. Thus, rewarding services and positions in business entities or public law bodies is a kind of intangible reward, which, in a certain phase (or over time), brings a material benefit to the bribed person. Therefore, corrupt behavior can also include the expectation of future rewards and benefits, the recipient of which is not only one person who will do something in exchange for benefits but can also be a relative or a friend (therefore, it is nepotism and favoritism).[12]

There are many reasons for the development and emergence of corruption,[5,8] from poor salaries to inadequate regulation of relations between certain medical industries and health workers. Sometimes, the reason for the development of the risk of corruption and corruption is a sufficiently poorly designed control system, public procurement or legal loopholes, which are then exploited. This may be the result of poor legislation in the area of prevention and prosecution of corruption and a possible poor enforcement system in practice. The reasons may also lie in the very absence of integrity and cultural characteristics of a certain society.[5,3] All of the above affects the variety of forms of corruption risk and corruption in health care.[13–15]

When classifying corrupt behavior, it is advisable to take into account the division into forms of inappropriate behavior in health care developed by the international nonprofit organization The European Health Care Fraud and Corruption Network,[16] which brings together health care organizations and organizations whose work includes fraud prevention.[17] EHFCN waste typology matrix identifies the following types of inappropriate health care behavior[16]:

- Mistakes: Illegal acquisition of any benefit by unintended violation of rules or guidelines.
- Abuses: Unjustified acquisition of benefits by conscious misinterpretation of rules or guidelines or by exploiting the absence of rules or guidelines.
- Fraud: Illegally obtaining any benefit by intentionally breaking the rules.
- Corruption: Illegal acquisition of any benefit by abuse of power or position with the cooperation of third parties.

The motivation for creating the aforementioned matrix stems from the chaotic and inadequate naming of various inappropriate behaviors in health care, which is the result of various factors.[17] Individual forms of criminality can somehow flow from one to another,[18] and according to the description of each category, we can see that it is about behaviors that can somehow be consequential or that one behavior can be the cause (or enabling factor) of another. For example, corruption can enable the concealment of fraud or the creation of a health system that facilitates, conceals or even insufficiently sanctions fraud (and thus in some way encourages it), which actually leads us to the concept of institutional corruption[15] and/or lands captured.

A significant contribution to the identification of key forms of corruption in health care was made by the European Commission, which in 2013 conducted research on corruption in health care in 20 member states of the European Union (EU). In addition to a classic review of sources and literature, they interviewed key stakeholders and analyzed cases of corruption in health care. A total of 86 cases of corruption in EU member states were analyzed. In the end, they identified six forms of corruption in health care, namely:

- Bribery in the provision of health care services.
- Corruption in procurement procedures.
- Inadequate approaches in marketing.
- Abuse of (management) position.
- Inadequate claims for services provided by contractors to payers.
- Fraud and embezzlement with medicines and medical devices, which also have certain subcategories.[19]

Both the European Health care Fraud & Corruption Network (EHFCN) typology and the research work of the European Commission and the works of researchers[8,15,20] indicate many forms and connections between different (key) actors. These many forms and relations are summarized by Savedoff and Hussmann[4] and expanded by Vian.[8] They are explained in the model of ten key relationships. It is about the presentation of five key actors: the state regulator, the one who pays, suppliers of equipment and medicines, other suppliers and bidders. Since the model is not complete, it needs to be supplemented or clarified. The additions are mainly due to the fact that there are certain groups of subdoctors (e.g., medical students), but also some relationships with which patients and insurance companies, as often the main payers of services, may not have as much contact. Therefore, we have 10 key relationships:

- Political/state decision-makers: Decision-makers in the health system (e.g., bribes when building new hospitals, health centers, granting concessions, passing key laws).[3,20] Here, the big problem is the bribing of regulators, who, because of bribes, do not do their job and thus cause material damage and create dangers for people.[4] In this regard, Hussmann[3] writes that there may even be state capture carried out by contractors of construction-health projects or manufacturers/distributors of drugs and medical devices.
- Supervisors of the health sector (medical associations, ethical courts): subjects of supervision.[4]
- Health institutions (hospitals, health centers, institutes): users of their services, their work partners and subjects from whom they order funds and equipment for work.[21]
- Medical and health faculties and research institutes: users of their services and work partners.
- Payers of health services (mainly insurance companies): recipients of funds. The emergent forms of corruption and corruption risks vary depending on the design of the system in each country. Thus, characteristics, whether public, private, concessionary actors or a combination of forms.[4]
- Manufacturers/distributors of drugs and medical devices: doctors.[22]
- Manufacturers/distributors of drugs and medical devices: medical students.[23]
- Drug manufacturers/distributors: research and/or scientific groups.[12]
- Doctors and patients[24,25]—the key problem (question) is whether giving a gift to a doctor is appropriate, how much the gift can be worth and in what form, and whether (not) giving a gift affects the doctor's treatment of the patient. There are no unequivocal answers here, but they are strongly related to the cultural characteristics of the country's population.[3,24]
- Other users of health services—doctors or other actors who issue documentation. The word patient would, according to the contribution of Prevolnik Rupel et al.,[26] is also used for this categorization since the patient is still a term used for the user of a health service, but in this case, it is still a different type of service, because the focus is not on the health of the individual, but about acquiring certain other social benefits or rights, permits or fulfilling prerequisites (e.g., for obtaining a driver's license). We believe that it is necessary to distinguish between patients who want (or have to) pay a bribe because their health is at risk and a form of corruption in which a person is not at risk of health but bribes a doctor or another person in order to achieve a certain benefit. In the first case, the violation of medical ethics is much more serious than in the second case of inexcusable behavior. In the first situation, the trust between the patient and the doctor is additionally abused, while in the second case, the persons may not even know each other that well.

In these and other relationships and cases mentioned above, the issue of conflict of interest is often observed.[8,27,28] Drinovec and Poredoš[29] offer a very good definition of conflict of interest in connection with the cooperation of the pharmaceutical industry: "conflict of interest implies the possibility that a relationship with a pharmaceutical company in a clinical physician, and even more often in a lecturer or writer of a professional and scientific article, is inappropriate influence on his medical, teaching or publishing practice to

work, teach or write contrary to scientific and professional and ethical views due to material benefit in the past, present or future." Of course, material benefits do not arise only from situations in which the background is that someone is in conflict for financial reasons (e.g., funding of research education) but also from situations in which the reason is a certain point of view, perception or noncompliance with ethical practices (e.g., plagiarism) regardless of what form it takes, inadequate regulation or reaction to such behavior causes numerous harms to the health care system or patients.[27] Conflict of interest is a frequently present element of business and conduct, and in the case of transparent disclosure, the associated risks can be adequately addressed and managed. Conflict of interest is not always corruption; on the contrary, corruption always involves conflict of interest. Although all the relations (and therefore the images) of corrupt risks and corruption deserve their attention, only the most dominant ones are highlighted in the literature.

## Risks of Corruption in Cooperation with Manufacturers/Distributors of Medicines and Medical Devices

Risks of corruption and corruption arising from the cooperation of doctors and/or other actors of the health system and manufacturers/distributors of drugs and medical devices are the most common topics discussed about the prevalence of corruption in the country. Ultimately, it is a complex relationship in which forms of legal and beneficial cooperation and forms of actual corrupt behavior appear.[12,22,30] Many organizations deal with them, for example, the European Commission—General Directorate of Home Affairs, Transparency International and the World Health Organization.

In a review of such collaborations in the United States, Wazana[30] found that such interactions begin as early as during studies and later that some physicians meet with pharmaceutical company representatives up to four times a month. She also states that in a fair number of the studies she reviewed, she found that these interactions affect the way drugs are prescribed. These activities often target decision-makers or doctors who have the power to decide which product will be primarily used in their setting (institutions).[12]

Detection of corruption in health care is even more difficult. It is often carried out under the pretext of legal and medically necessary activities to improve patient care. Namely, there are many forms of financing various activities, where the funds are most often contributed by manufacturers/distributors of medicines and medical devices. Examples of this type of financing are[20,22]:

- Payment of doctors for consultations.
- Event financing (conferences, symposiums, etc.).
- Financing of conference visits.
- Payments for presentations/lectures and writing papers.
- Education financing.
- Funding of research (in various forms, from funding projects to funding research programs of institutions).
- Giving away promotional items (also under the pretext of testing).
- Giving away test subjects.
- Giving various gifts (e.g., books, notebooks, pens, stethoscopes, trips, etc.).
- Donations.

Of course, all the mentioned forms of financing are not corrupt acts in themselves, but they can be used to cover up corrupt actions, and as research shows, it is large-scale financing. Ozaki et al.,[22] in their study for Japan, found that in 2016, 71 pharmaceutical companies allocated US$1.8 billion to nonresearch activities. Millions of dollars allocated by pharmaceutical companies to physicians for various activities have also been reported in the United Kingdom, and in the United States of America (US), they are even multibillion dollar amounts.[27] In addition to all that, of course, the scope of the pharmaceutical sector and market in a certain country must be taken into account, such as in Japan, among the largest. Any such cooperation is not negative because it allows doctors to receive certain funds that they can spend on education (and thus also the acquisition of the necessary competencies (points) for license renewal). The problem, confirmed by research and examples[8,12,27,30,31] is that a biased treatment of a certain manufacturer/distributor can develop based on such cooperation: drugs and medical devices.

## Risks of Corruption and Corruption in Public Procurement

The essence of corrupt influence on key decision-makers in an individual health system or organization and/or individual doctors is to obtain a certain job through said influence. For example, an agreement that for certain conditions, only a medicine of a certain company will be prescribed, or medical products/devices of a certain manufacturer will be used. In many countries, the selection of bidders and producers in the public sector takes place through public procurement, and therefore, public procurement is one of the key areas with large and numerous risks of corruption. Within this category, there are many different forms of myth implementation. The European Commission thus recognized the use of intermediaries who cover up corrupt cooperation, the use of the tender adjustment method, where people are bribed to determine conditions and specifications, which are adjusted only to the favored bidder. The method of disqualifying bidders is also used, where bribed persons eliminate bidders with false arguments.[5]

## Risks of Corruption and Corruption in the Treatment of Patients

Corruption risks that fall into this category mainly relate to unethical behavior: patient selection. Therefore, those patients with financial, formal or informal power receive better or preferential treatment in an otherwise public

health system. There are even situations where people do not receive health services at all without some informal payments. Low- and middle-income countries are clearly problematic in this segment.[25]

Lewis[24] states—or was the case at the time of her review of data and studies conducted between 1994 and 2000—that such informal activities were also common in the countries of Central and Eastern Europe and the former Soviet Union. However, the report of the European Commission testifies that the extortion of patients in exchange for preferential treatment, that is, the willingness to treat the patient preferentially in exchange for payment, is also used in Western European countries.[5]

In research and analysis using World Bank indicators, World Corruption Barometer data and other data,[32] it can be seen that about 7 % of respondents from higher-income countries use or feel forced to pay informally for health services. The incidence rises to 20% in middle-income countries and almost 31% in low-income countries. For some countries (e.g., Burundi and Azerbaijan), the incidence can be >50%.

In general, the public health system can always offer services in the private market, but in this case, payment for the service should be paid to the institution, not to the individual. The increased risk of corruption is, for example, in environments where doctors work simultaneously in the public and private sectors, or the public sector system is inadequately designed with institutional corruption[14] and allows prejudice or diversion of patients to private practices, often at the expense of absenteeism.[25] Incaltarau et al.[32] note that the level of informal payments to doctors is lower in countries where there is also a greater share of private financing of services. The argument for privatization is mentioned, and the authors believe that it can still be bad for national well-being. Namely, the smaller occurrence of informal payments in areas with a large share of private financing of health services is, of course, logical because someone who can afford informal payments can do so in an official, formal way using insurance companies and similar actors. However, this in no way reflects that the availability of services is, therefore, greater or better.

After all, a few words about the gift of a doctor. Patients' gifts to doctors can be motivated solely based on sincere gratitude. This type of giving is often not about large gifts nor about very frequent actions. Of course, it all depends on the cultural characteristics of the society but also on the individual's perception of the role and necessity of such giving. At a certain stage, corruption becomes an almost intractable problem that requires a violent transformation of the entire system, for which there is no motivation because corruption is hidden, driving a perpetual mobile mechanism that brings certain benefits to key decision makers and thus, they have no interest in changing the corrupt status quo.

## Ways to Limit the Risk of Corruption in Health Care

Various ways of limiting corrupt behavior in health care are emerging, whereby there is an awareness that the entire health care sector must be covered, and if possible, it can also go beyond and include the wider state administration.[3,5] Moreover, the overall quality of the rule of law and the quality of governance have been shown to reduce the incidence of informal payments in health care and increase the willingness to report corrupt acts.[32] This is actually a logical relationship since the proper governance of the state allows its inhabitants to express a certain degree of trust in it, thereby reducing tax avoidance and evasion and reducing activity in the informal economy and thereby enriching the state budget from which a good and affordable health sector can be financed. The need to increase transparency and accountability of key actors is often mentioned as a solution.[3,8,25]

The specific methods used are also partly related to the extent of corrupt behavior present and can be roughly divided into the following[20,33]:

- Codes of ethics (with a strong focus on the implementation of zero-tolerance mechanisms and properly described protocols for dealing with ethically problematic situations and for reacting and sanctioning actors in case of ethical violations).
- Implementation of an appropriate system/protocol of cooperation between manufacturers/distributors of drugs and medical devices and employees in health care.
- Introducing or supplementing the educational system in the field of medicine and health care with contents from the field of corrupt behavior.
- Development of an adequate health system (e.g., adequate access to health services, adequate effective control of the distribution of funds for health services).
- Adequate public procurement system.
- Adequate protection system for whistleblowers, whistleblowers and witnesses in cases of corruption in health care.
- An adequate system of supervisory bodies, which, through financial audits, take care of the proper work of bodies and institutions and detect misconduct.

Vian[8] points out that these are mechanisms that take care of increasing transparency, responsibility and the creation of appropriate operational protocols in ethically complex situations. The review paper Vian,[8] which is an extension of her previous highly cited works, also offers insight into concrete mechanisms and tools for detecting the risk of corruption and, above all, shows the breadth of the problem of corruption in health care because it clearly indicates, for example, how it is related to the problem of counterfeit or low-quality medicines. Above all, it offers insight into the strategy of curbing corruption, which is useful knowledge for anyone whose field of work involves curbing corruption in health care. Also informative is the work of Rodwin,[12] who analyses conflicts of interest in relation to pharmaceutical companies and makes many suggestions on how to manage them. Although his proposals are for the United States system, the premise of the proposed mechanisms is, in our view, universally applicable. However, the final and probably quite

important measure is the appropriate attitude of individuals toward corruption.[5] That we do not accept and cultivate it, that somehow it does not become an epidemic over time. In order for measures to limit corruption to take root, appropriate operational policies are important,[4,5,8,30] and this is where a certain closed-loop appears. Adequate policies are needed that would change the situation in the area of corruption and corruption risks for the better, including improving the integrity of the behavior of key individuals and their motivation for intervention. Nevertheless, without motivation for this type of intervention, the development of such a policy will not happen.

## Conclusion

Risks of corruption and corruption in health care remain a global problem to which BiH is not immune. The complexity of the medical profession is reflected in its natural-scientific as well as social-scientific component. Doctors and health care workers not only possess a wealth of expert natural-scientific knowledge about the functioning of the human body and the technology used to study and treat it but also require broader knowledge and social obligations, or rather, deontological commitment on the one hand, but still a certain humanity on the other. In this connection, many questions arise, such as the question of termination of pregnancy, euthanasia, the question of conscientious objection, etc. A doctor sometimes has responsibility and commitment not only to the patient but also to his umbrella organization, state structures (e.g., the police) and society in general; see also the World Medical Association. On the other hand, the doctor has the obligation to do everything possible for the best treatment of the patient. Despite all that, he is still human. He must be constantly educated because the promotion system and the profession itself require it. However, education is not free. He has to be careful not to burn out, and with all that, he is often a family man who definitely wants to take care of his family financially. The role of money in the lives of doctors and other health care workers is not unimportant, and it also affects thinking about their possible business in the private market. Cooperation in the private market or cooperation with manufacturers/distributors of drugs and medical devices is not always morally and ethically controversial.

Taking into account the literature review and study findings, the following research insights are suggested for key next steps in limiting corruption and corruption risks. First of all, conducting research based on Ozaki et al.,[22] who investigated both the adequacy of funding reporting systems (in terms of transparency and traceability) and the extent of funding coming from pharmaceutical companies. It would also be appropriate to conduct qualitative audit research on the scope of this type of funding. Second, researching the dark field of corruption, we are interested in how much is the loss due to corruption in health care. Opinions about how much corruption actually is differ even among actors in health care. Thus, the next step of the research is imposed—a proper calculation of this damage, which will certainly be a big task. In order to shed light on the dark field of corruption in health care but also to assess the damage, it would certainly be expedient to consider Vian,[8] who identifies and presents the advantages and disadvantages of four key approaches, namely perception surveys, household and public expenditure surveys, collection qualitative data and an overview of the control system. As for systemic corruption in the country, it is strongly indicated that it is also present in the health system. If we add to that the criticism of the rule of law, which is one of the predispositions that corruption does not develop excessively,[4] there are a number of alarming indicators that we are in a situation that needs to be addressed. Therefore, it would make sense to conduct research like the one conducted for Austria by Sommersguter-Reichmann and Stepan,[14] where they checked the existence of institutional corruption and thus empirically confirmed or denied the existence of the mentioned form of corruption. It would also be prudent to conduct research on the effectiveness of the health care system—examine whether and how it was done in selected European countries, perhaps especially where they have the Bismarck model of health care, and compare it with BiH. The results would also be useful as an indirect indicator of corruption.

The field of health and medicine is in an era where advanced discoveries are made every year. We are entering the era of the Internet of bodies, which, on the one hand, has exceptional value in the field of combating corruption because the obtained data will help in diagnosis and, when properly matched, show how the treatment went. Blockchain technology is already helping to control the integrity of medicines and will certainly help to limit corruption. On the other hand, such a large database poses a risk of misuse. Private business entities would certainly like to access such massive data and use it for marketing and product development. Among the business entities that would certainly benefit from such data are manufacturers/distributors of medicines and medical devices, who would, therefore, have an even greater motivation for bribery. Therefore, it is necessary to be extremely careful that technology will be used in the future to prevent corruption and corruption risks. However, no technology can limit inappropriate behavior if society itself and the individuals who are part of the problematic system do not want to limit it. Although they may not participate themselves, too often they look away, surrender to fate, and accept the diagnosis that the disease of corruption cannot be cured.[6]

"Integrity without knowledge is weak and useless, and knowledge without integrity is dangerous and terrible."—Samuel Johnson

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REVIEW ARTICLE

# Pregnancy, Childbirth, and Religion in Bioethical Education: One Proposition

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## Abstract

The article presents and actualizes the authors' thoughts and views that contribute to establishing and developing a culture of dialogue on the stated topic in bioethical education. Therefore, the article should assist students of health studies and health professionals in establishing and developing relations with pregnant women and mothers (and newborns) raised and matured within different religious values. Considering that the topic is intended for implementation in the curriculum, the selection of literature aimed at selecting authors whose words and thoughts will be clear and understandable to students and, as such, will help them understand the behavior and decision-making of religious pregnant women in healthcare and nursing procedures. For that purpose, a PubMed database known to students and teachers was researched, in which articles related to the words pregnancy, childbirth, religion, the religiosity of pregnant women, church and pregnant women, etc., were published in the past 5 years.

Two books were found while searching the literature. The first book is also a Croatian translation of the book "Christ Centered Childbirth" by Kelly J Townsend, in which three cases from Croatia were published. In these cases, pregnant women and mothers describe the practical importance of reading the thoughts and recommendations published in this book for pregnant women, future parents, and families. The second book is "Pregnancy and Breastfeeding," published in the edition "Islam and Medicine" by Suada Mujkić. The content of the book connects the Islamic religion and tradition with pregnancy, childbirth, and breastfeeding.

The article can help students of the faculties of health studies and health professionals to equally apply, in addition to professional knowledge, ethical cognition that will help them establish and develop an ethical relationship and ethical care for religious pregnant women and mothers when facing a decision.

**Keywords:** Bioethical education, Healthcare professionals, Pregnancy, Religious beliefs, Students.

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## Introduction: Basic Principles of Bioethical Education at the Faculty of Medicine and Faculty of Health Studies, University of Rijeka

A proposition of bioethical education presented in this article comprises the content and methodological conceptualization of teaching bioethics and bioethical courses that the author of the article designs and realizes at the Faculty of Medicine and the Faculty of Health Studies of the University of Rijeka.[1–4] In short, the primary characteristic of this education is a focus on a problem-oriented curriculum. Lectures and students' bioethics workshops are forms of teaching during which students acquire the knowledge and skills of ethical analysis and solving ethical problems.[5] The lectures are a form of teaching intended for the acquisition of theoretical knowledge of (bio)ethics and the perception of conceptual and historical attitudes in medical ethics. They are aimed at developing awareness of the complexity of moral conclusions in modern medicine.[6] The dominant characteristic of a seminar form of teaching is a higher degree of communication among participants in the educational process, the equal appreciation of thoughts and ideas, and the development of a culture of dialogue and independence in the educational process.[7] Students' bioethics workshop is a form of a seminar that characterizes students' individual research and the presentation of research results with particular emphasis on the consequences of applying the offered theoretical and practical solutions.[8] Furthermore, on a concrete example—the topics of pregnancy, childbirth, and religion—we suggest and present the content and methodology of both of these teaching forms. We set ourselves the goal for the lecture: to introduce students to the content and methodological

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perspectives that link pregnancy, childbirth, and religions in published scientific and professional articles. In the students' bioethics workshop, we demonstrate students' activities and approaches in researching questions and problems within the topic and finding concrete cases and ways to solve them. The subtitle of the article, "Pregnancy in the Religious Tradition—A Review of the Literature," is part of a lecture, and the subtitle "Students' Bioethics Workshop—A Problem Approach to Pregnancy and Childbirth–The Results of Students' Research," describes students' activities and illustrates students' research and presentation of their research results.

## Pregnancy in the Religious Tradition: a Review of the Found Literature

As already stated, the PubMed database and the professional journals of health professionals in Bosnia and Herzegovina, Montenegro, Croatia, Slovenia, Serbia, and the Northern Republic of Macedonia were researched. All of the above was researched on the internet. The research results are as follows: the Journal of Health Sciences of the Faculty of Health Studies of the University of Sarajevo was researched in Bosnia and Herzegovina. In Montenegro and the Northern Republic of Macedonia, no journal was found. In the Republic of Croatia, the Journal Primaljski Vjesnik of the Croatian Chamber of Midwives was researched. In the Republic of Slovenia, the journal Slovenian Nursing Review of the Chamber of Nurses, Midwives, and Healthcare Technicians of Slovenia, and in the Republic of Serbia, the journal Sestrinska riječ published by the Association of Nurses, Technicians, and Midwives of the Republic of Serbia were researched.

Two books were also consulted in preparation for the lectures. The first book, Christ Centered Childbirth, by Kelly J Townsend, was translated into Croatian and published by the Teovizija, Zagreb, 2020. The second is Trudnoća i Dojenje (Islam and Medicine), by Suada Mujkić, a Bosnian author, available on the mekteba.com website.

A review of the named sources led to the following results:

Five articles were found in the database PubMed. For the introduction to the lecture, we use the article that thematizes the relationship between religiosity and behaviors that promote pregnant women's health.[9] The authors of the article inform us that the research participants expressed their religious affiliation to Catholicism, Islam, Protestantism, Orthodoxy, Reformism, or some other religious belief. The study involved 86 pregnant women between the ages of 18 and 39, 11–39 weeks pregnant. The most significant percentage of the pregnant women, 76% (65 of them), said they were of the Christian faith, 8% (seven of them) said they were Muslim, Buddhist, Spiritual, and Jehovah's Witnesses, and 16% (14 of them) said they did not belong to any religion. For this topic, it is essential to specify that 55% of the declared believers indicated that religion affects all areas of their lives. Following this information, we were interested in how religion affects the promotion of healthy living of religious pregnant women. The authors point out that in the practical life of religious persons, the relationship between religiosity and a healthy lifestyle is expressed in concrete religious approaches to healthy living with which believers are familiarized at religious services, by reading religious materials that promote healthy living, and then in personal prayers.

The presented content is followed by the content of the article that thematizes the benefits of church support to pregnant women.[10] The authors of the article point out the assistance provided by the church community in understanding depression and treating the effects of depression as a common occurrence in pregnant women. Pointing out that the symptoms of depression may affect the outcome of childbirth and the newborn's reduced body weight, they highlighted the need to explore factors that would improve pregnant women's mental health. Of the 114 pregnant women who participated in the study, 107 completed the survey questionnaire entirely. Respondents, among other questions, answered how often they go to church and whether they have church support during pregnancy. Among the respondents, the largest percentage (84%) were primiparas, 51% were unemployed, 70% said they did not go to church often, and 24% said they went to church weekly. About 43% stated that they did not have the support of the church, and 36% stated that they had the support of the church. Using measurements according to The Psychological General Well-being Index (PGWBI), a higher level of psychological well-being was found in religious pregnant women who stated that they had the support of the church during pregnancy. As the authors pointed out, the research results suggested that church members' support is more important for the psychological well-being of pregnant women than attending religious services. They also concluded that nurses who provide support to pregnant women must be able to identify risk factors for depression in order to notify mental health services in a timely manner, initiate counseling, and undertake crisis intervention.

The same group of authors published two articles dedicated to pregnant Muslim women of Moroccan descent. Data for the research and publication of both articles were collected through direct interviews with 12 pregnant Muslim women who lived in a high-density immigrant settlement. The uniqueness of these articles is the fact that their data are essential for additional analysis of the ethical attitude toward pregnant immigrants and that one author is stated to be from the Faculty of Theology. In the first article, the authors discuss how pregnant Muslim women of Moroccan descent accept and approach the screening for antenatal anomalies.[11] In order for pregnant women to speak openly, interviews were conducted without the presence of their family members. The interview was conducted by midwives who digitally recorded the conversation. Although aware that she would oppose Islamic rules with her decision, one respondent expressed a willingness to terminate a pregnancy in the event of diagnosed anomalies.

The second article emphasizes the individual approach to patients and the necessary knowledge acquisition about

the Islamic view of the values of life.[12] The authors point out that in the counseling process, it is crucial to provide clear and understandable information on the basis of which informed consent would be reached for taking the congenital anomaly test. Also, it is essential to emphasize that when talking to Muslim women of Moroccan descent, the authors concluded that counselors who would familiarize them with congenital anomalies should demonstrate knowledge about the quality of life affected by Islamic religious beliefs. Finally, the fifth article says that religious belief is a determining factor in deciding whether to continue the pregnancy of women infected with the Zika virus.[13] Of the 21 respondents, 19 declared themselves to be Catholics and two active Christians. Regardless of religious affiliation, the respondents showed a low level of knowledge and awareness about the consequences of perinatal Zika virus infection. For this article, we highlight three views that have guided decision-making. These are: "God, why me?," "Clinging to a divine miracle," and "It was God's will." On the one hand, we can state that these views indicate the depth and strength of religious influence on decision-making. On the other hand, as we read in the text of the article, we see the respondents' need for knowledge about the consequences of prenatal infection, about which they know almost nothing. We would like to add that the words microcephaly, intellectual disability, visual and auditory alterations, and epilepsy require special attention when explaining and understanding their meaning. Because the person who needs to understand them in order to make a decision and the overall future life of the person affected by the Zika virus in the perinatal period equally depend on it.

An article on the influence of religious beliefs on pregnancy, childbirth, and breastfeeding was found in only one journal, the Midwifery Gazette (Primaljski vjesnik) of the Croatian Chamber of Midwives. This is the article, "Cultural and spiritual aspects during pregnancy and childbirth in Christianity and Islam—a midwife and holistic approach,"[14] whose author is Marijana Ivančić, a bachelor of midwifery. It is highly commendable that the article was written by a midwife who pointed out to her colleagues the importance of understanding the influence of religious beliefs on pregnancy and childbirth among members of the Christian and Islamic religions. All the more so because the article was written when migrant movements were also present in Croatia, in which pregnant Muslim women also participated.

In order to get acquainted with how the representatives of the Islamic religion treat pregnant women, breastfeeding women, and newborns, we used the book Pregnancy and Breastfeeding[15] by Suada Mujkić. When talking about pregnancy, the author uses medical arguments formed according to the research results by medical scientists. When talking about breastfeeding, she presents legal arguments created according to the views of law schools in Islam and their leading representatives. When it comes to the topic of pregnancy, a consensus has been reached on the following: "giving birth, breastfeeding and caring for a child is a woman's main natural task … a woman must be aware of her importance and her sacrifice for the benefit of the future of human society...; men must know that a woman's life path is thorny and full of life-threatening danger and danger to health. That is why they should show the woman-mother deep respect, kindness, and support at every opportunity."[16] The physical and psychological preparation of a woman for pregnancy is presented in the book through a series of rules for healthy living that would ensure a healthy pregnancy and successful birth. When it comes to physical preparation, the rules include a woman going to a gynecological examination and tackling bad habits such as smoking and excessive caffeine consumption, which implies an Islamic attitude toward banning alcohol and drug use. The research results on the effectiveness of prayer served the author as proof that regular prayers help pregnant women bear pregnancy and childbirth more easily and give birth to a healthy newborn.

The author also describes the physical and mental symptoms of pregnancy, stressing that they are individual and should be approached individually. She especially emphasizes the danger of the attitude that a pregnant woman should eat more, that is, for two. The author points out that avoiding conflicts and quarrels, moderate exercise (walking, swimming, Pilates), regular visits to counseling, personal hygiene, and cleanliness contribute to the pregnant woman's mental stability and mental health. The book describes what happens in a pregnant woman's body 24 hours before childbirth. Special emphasis is placed on the occurrence of labor and differences in their intensity in women who have already given birth and those who have not. Given that the author is very instructive in her views on breastfeeding in Islam, we consider it necessary to stress the specifics of breastfeeding and access to the human milk bank.

According to the author, the basic views of Islam on breastfeeding are: the first 6 months, the child should be exclusively breastfed; the mother must learn the technique of breastfeeding; breastfeeding is the child's right. Islam further recommends breastfeeding a child up to 2 years of age. In support of breastfeeding, the author stresses the nutritional value of breast milk, the mother's obligation to eat appropriately and healthily, breast hygiene during breastfeeding, and ways in which mothers can help each other or whom to contact in case of a problem during breastfeeding. The main arguments favoring breastfeeding are that it creates a bond between a mother and a child, increases the children's intelligence, and protects children's health. Also, breastfeeding protects the mother's health, and it is inexpensive and more practical than formula feeding.[17] Illness and lack of milk are the only two justifiable reasons for not breastfeeding a child. In these cases, a mother can use a formula as an alternative to breast milk or employ a breastfeeding woman. The author tells us that employing a breastfeeding woman is a phenomenon whose history is older than Islam and is associated with women from wealthy families who did not breastfeed their children in order to preserve their beauty. We further learn that Sharia regulations do not prohibit the engaging of a breastfeeding woman if the parents agree that it is in the interest of their child, that the breastfeeding woman is paid compensation,

and that the breastfeeding woman is treated nicely. Hiring a breastfeeding woman is preceded by numerous answers to questions about her faith, her moral values, her physical and mental health, lactation, and recovery from childbirth, etc. The ideal age for a breastfeeding woman is between 20 and 30. A woman who has given more births is considered a better breastfeeding woman; in order to avoid possible mutual infections, both the breastfeeding woman and the child must be medically examined.[18]

The author further claims that although today's mothers opt for formula feeding rather than hiring a breastfeeding woman, there are situations in which hiring a breastfeeding woman is mandatory: when the child is born weak (here, the author does not define the meaning of weak) when the child is born prematurely, when the child is in poor health and when formula harms the child so much and puts the child in grave danger. Hiring a breastfeeding woman creates a kinship by milk, which, in Islam, is equated with blood kinship. Finally, the author points out that milk banks are established at institutions for the protection of mothers and children with the intention of feeding children who, due to their weakness or illness and the inability or illness of the mother, cannot be breastfed. In these situations, in the opinion of modern Islamic jurists, it is impossible to determine or oblige to kinship by milk due to the mixing of milk from several women. In conclusion, the author emphasizes that breastfeeding, or hiring a breastfeeding woman, within Islamic culture and tradition can answer the issue of feeding premature babies, weak and sick children, infirm and sick mothers, or mothers who do not have enough milk.

We found views on the practical influence of religious belief on pregnancy and childbirth in the Croatian translation of the book Christ Centered Childbirth by Kelly J Townsend.[19] This book is especially important because it contains cases from Croatia. In the first case, the pregnant woman testifies to the soothing power of prayer she prayed in front of the statue of the Mother of God in the 40th week of pregnancy. Then she mentions the warmth of the delivery room she felt when she blessed the area, the feeling of the presence of God and the Mother of God in it. All this contributed to the fact that she does not feel fear and does not feel lonely. She is convinced that praying during childbirth for "a relaxed body, peaceful soul, and my thoughts" made her natural birth easier.[20] In another testimony, the pregnant woman points out the benefits of reading the book because the book's content convinced her that the spiritual part of childbirth is the most important. Following this conviction, she allowed "the Lord to guide her in the delivery room and to use her body to bring the child into the world as painlessly as possible." A pregnant physician testifies to the importance of the book's contents in the third testimony. After the labor started to occur every 3–4 minutes, the pregnant physician and her husband said a prayer from the book and went to the hospital. In front of the hospital and between labors, she said a short prayer, praying to God that she would relax entirely so that the child could pass through the birth canal. As a physician, she especially stressed the benefit of the practical application of what she had read in the book.

## Student Bioethical Workshop: Problem Approach to Pregnancy and Childbirth: the Results of Students' Research

In the continuation of the article, we present a proposition of activities of students and teachers for the realization of this topic. According to the requirements of a pedagogical science and common pedagogical practice, we state the educational objectives, the activities of students and teachers in the process of acquiring knowledge, and the achieved learning outcomes.

The aim of the workshop is to (1) recognize and define medical and ethical issues related to pregnancy and childbirth, with particular reference to pregnancy and childbirth in different religious traditions and cultures and (2) problem presentation and actualization of the author's views on their solution.

## The Process of Acquiring Knowledge

Students select a topic from the list of offered topics and research the views of the authors who have written an article, book, or some other professional and scientific work on a given topic. The list of topics is as follows—(1) pregnancy and childbirth through scientific perspectives (medical, historical, psychological, demographic, anthropological, legal)[21]; (2) pregnancy and childbirth in nonscientific perspectives (in the media, politics, NGOs, written works/literature, film and television series)[22]; (3) pregnancy and childbirth in theological perspectives (Christianity, Judaism, and Islam)[23]; (4) rituals and rites related to pregnancy and childbirth in various cultural patterns; (5) childbirth pain in different religious cultures and traditions; (6) attitudes and interpretations of religious teaching on risky lifestyles in pregnancy (alcohol, cigarette, and drug consumption, obesity); (7) an attitude of the health system and the healthcare professionals toward (a) pregnant migrants and (b) migrant mothers and newborns (European Union member states, non-European Union member states, Africa, Asia, America, Canada students choose the healthcare system themselves); (8) the invention of a vacuum extractor by the physician from Rijeka, Viktor Finderle; (9) the spouse infertility—a condition or disease in religious beliefs; (10) motherhood in religious traditions; and (11) adoption of children in different religious cultures. Students are suggested to visit and talk with religious community leaders, civil society organizations, maternity hospitals, healthcare professionals, and religious pregnant women willing to discuss the influence of religious belief on their understanding and acceptance of facts about prenatal tests, pregnancy, and childbirth.

Students find and research the views of authors who have written an article, book, or some other professional and scientific work on the chosen topic. During their presentation in front of their study group, students—(1) cite authors who have published a book, scientific or professional article on

the chosen topic; (2) state similarities and differences in the views and conclusions of the researched works[24]; (3) explain whether and, if so, why an interdisciplinary dialogue on the researched topic is required; (4) stress whether in addition to the mentioned scientists and experts it is necessary to include some more and, if so, which scientists and experts; (5) find two nonscientific perspectives that can help solve problems within the topic; (6) list two questions that they would ask the quoted authors and explain why they would ask these questions; and (7) state arguments for their own conclusion, that is, they explain their own point of view on the topic. After the oral presentation, students usually answer the questions of the students who listened to their presentations.

After the presented topic and the answers, the teacher invites the present students to comment on the offered author's views and solutions and complete them with their own suggestions. At the end of the workshop, students assess the consequences of applying the authors' solutions, and as a learning outcome, they adopt a pluriperspective approach in removing stereotypes, prejudices, ignorance, and possible fear of people living with different religious affiliations and lifestyles.

## Conclusion

The presented content on a theoretical level can inspire further research of scientific and professional articles that thematize pregnancy and childbirth in different religious traditions and cultures. It can also assist in recognizing the importance of interdisciplinary dialogue on this topic and the need to include social and worldview perspectives that would contribute to the understanding and respect of different traditional values. On a practical level, the proposed content can guide students of health studies and healthcare professionals to respect the identity characteristics of persons and patients belonging to different cultural and religious traditions. Finally, we believe that the proposed forms of teaching and the described activities prepare students who are future health professionals to meet people whose religious beliefs they do not know or about whom they do not have sufficient knowledge.

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## Author's note

The International Academy of Sciences and Arts in Bosnia and Herzegovina since its foundation until today has been paying great attention to the relationship between science and religion. This is evidenced by the fact that topics on the relationship between science and religion have been presented at every scientific symposium of the Academy. Here specially is important the title of the journal of Academy - Science, Art and Religion and recently published book Science and Religion-Synergy not Skepticism by Asim Kurjak, Frank A Chervenak, Laurence B McCullough, Aziz Hasanović, (Publisher: Jaypee Brothers Medical Publishers (P) Ltd.; 1st edition January 30, 2018). The beginning of life, humane reproduction and modern obstetrics are examined in a religious and scientific framework. Interested readers can contact us directly for sources and additional literature.

REVIEW ARTICLE

# A New Method in Cardiovascular Rehabilitation: Look at the Future?

Goran Krstačić[1], Antonija Krstačić[2]

## Abstract

**Aim:** To point out the importance and possibility of applying some new methods of digital health in cardiovascular rehabilitation (CR).

**Background:** Cardiovascular rehabilitation (CR) is a part of cardiologic treatment that is performed in specialized hospitals or outpatient centers by a team of medical personnel using an interdisciplinary and transdisciplinary approach. CR is an effective, safe, cost-effective procedure that can be tailored to the patient and reduces mortality, increases functional capacity, restores work fitness and work capacity, and improves quality of life. This form of cardiologic treatment is adaptable and economical but still underused because it is partly ignored by medical professionals themselves, and also due to the possible remoteness of available rehabilitation centers.

**Materials and methods:** The combination of analysis of the heart rhythm variability of the patient, who is in the CR program, and music and image therapy, the so-called fractal chromo-musicotherapy. This means that we could give the patient the so-called "three-in-one" therapy, that is, chromotherapy based on the images and colors of his heart generated from the digital data of the electrocardiogram (ECG) signal during the cardiac rehabilitation program (basic ECG, telemetry ECG, or 24-hour ECG recording) and music therapy that is especially for the patient composed by a professional pianist who has extensive experience in music therapy for various forms of illness. Patients listen to "harmonious music" for and from the heart and, at the same time, observe fractal images and colors of their hearts.

**Conclusion:** The combination of standard and new techniques based on a holistic approach and digital health could achieve better patient involvement in the CR program, better rehabilitation results, and longer sustainability of positive results.

**Keywords:** Cardiovascular rehabilitation, Digital health, Fractal chromo-music therapy.

## Sažetak

**Cilj:** Ukazati na važnost i mogućnost primjene nekih novih metoda digitalnog zdravlja u kardiovaskularnoj rehabilitaciji.

**Pozadina:** Kardiovaskularna rehabilitacija (KR) dio je kardiološkog liječenja koje u specijaliziranim bolničkim ili izvanbolničkim klinikama provodi tim medicinskog osoblja interdisciplinarnim i transdisciplinarnim pristupom. Kardiovaskularna rehabilitacija je učinkovit, siguran, isplativ postupak koji se može prilagoditi pacijentu i smanjuje smrtnost, povećava funkcionalnu sposobnost, vraća radnu kondiciju i radnu sposobnost te poboljšava kvalitetu života. Ovaj oblik kardiološkog liječenja je prilagodljiv i ekonomičan, ali još uvijek nedovoljno korišten jer ga dijelom ignoriraju i sami medicinski radnici, ali i zbog moguće udaljenosti raspoloživih rehabilitacijskih centara.

**Materijali i metode:** Kombinacija analize varijabilnosti srčanog ritma bolesnika koji je u programu kardiovaskularne rehabilitacije i terapije glazbom i slikom, tzv. fraktalne kromomuzikoterapije. To znači da pacijentu možemo dati tzv. terapiju "Tri u jedan," tj. kromoterapiju koja se temelji na slikama i bojama njegovog srca generiranim iz digitalnih podataka EKG signala tijekom programa kardiološke rehabilitacije (osnovni EKG, telemetrijski EKG ili 24-satno snimanje EKG-a) i glazbenu terapiju koja je posebno za pacijenta sastavljena od strane profesionalnog pijanista koji ima veliko iskustvo u glazbenoj terapiji različitih oblika bolesti. Bolesnici slušaju "harmoničnu glazbu" za i iz srca i pritom promatraju fraktalne slike i boje svoga srca.

**Zaključak:** Kombinacijom standardnih i novih tehnika temeljenih na holističnom pristupu i digitalnom zdravlju mogla bi se postići bolja uključenost pacijenata u program CR, bolji rezultati rehabilitacije i duža održivost pozitivnih rezultata.

**Ključne riječi:** Kardiovaskularna rehabilitacija, Digitalno zdravlje, Fraktalna kromo-muzikoterapija.

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## Background

Cardiovascular disease (CVD) is a major contributor to the worldwide health burden and the number one cause of death globally.[1] The total economic burden of CVD in the EU was estimated to be €210 billion in 2015, with 53 and

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21% accounted for by direct medical costs and productivity losses.[2] In Croatia, although mortality from CVD has decreased over the last decade, CVD remains the leading cause of death and accounts for 48% of deaths in women and 37% in men.[3,4] The general mortality rate from CVD is higher in women than in men, and CVD in women has received special interest in the last 10 years.[4] Due to a wide distribution of behavioral risk factors in Croatia, including tobacco smoking and low physical activity, the mortality from preventable causes in Croatia is above the EU average.[5] With a share of almost 13%, CVD is the leading cause of hospitalization in Croatia, with an average length of hospital stay of 7.2 days for men and 7.8 days for women.[4] To decrease the burden of CVD, reliable tools are required to identify persons without known CVD who are at high cardiovascular risk and to guide those persons to lifestyle modifications or preventive medication.[6–8] Several risk assessment strategies have been used based on large prospective cohort studies, such as the Framingham Heart study,[9] and the systematic coronary risk evaluation risk calculator has also been created and recently updated to estimate the 10-year risk of fatal CVD in asymptomatic individuals.[10,11]

Cardiovascular rehabilitation (CR) is a component of secondary prevention and is carried out in outpatient or inpatient centers by trained staff with a multidisciplinary approach. All parts of the CR program are important and related, from noninvasive cardiology treatment at the very beginning of CR and during the program to monitor the effectiveness of rehabilitation and eliminate possible medical problems, psychocardiological diagnostics and counseling, education of patients and their families about lifestyle changes and treatment.

Cardiovascular rehabilitation (CR) is a proven, effective, and safe program that reduces mortality, increases physical, work, and fitness capacity, and ultimately improves the quality of life. Unfortunately, the CR program is still underrepresented in Croatia, but also in Europe and the world, and depending on the countries and centers, usually, up to 30% of heart patients use it. There are many reasons, from insufficient centers and unequal geographical distribution to the doctors themselves who insufficiently refer patients for rehabilitation, but often the causes are also in the patients themselves in terms of insufficient persistence or comorbidities that make it impossible to carry out CR[12] (Fig. 1).

Professor Lars Ryden from Sweden, the President of the European Society of Cardiology (ESC), gave a statement during the opening ceremony of the ESC Congress in Amsterdam in 2000. "Prevention and Rehabilitation will become a main task of the ESC during the next 20 years." Also, the previous statement was given by the World Heart Organization in 1993. that "no one is too young to be too old for CR" is very important.

For this reason, in addition to the traditional methods of CR, it is necessary to use all the possible other methods, like digital health applications. Digital health is a key area for the ESC, and there are already published position papers of the ESC about e-Health or ESC tablet and smartphone applications for patients with atrial fibrillation (AF) and their healthcare providers. Also, a very important position paper done by the ESC Working Group on e-Cardiology in collaboration with other ESC Councils and Associations titled "Overcoming challenges in digital health implementation in cardiovascular medicine" has been published in the European Journal of Preventive Cardiology. Digital health is a very broad area of cooperation between different fields and could include many areas like telemedicine, telerehabilitation, computers in cardiology, e-health, m-health, artificial intelligence, machine learning, deep learning, big data, and much more. In addition to their basic function of communication, applications, and smartphones can also be used for education and monitoring of patients' medical data, which is one of the characteristics of digital health. On the other side, m-health focuses on the use of mobile and wearable devices and software applications ("apps") for health purposes. It's based on the fact that the world population has about 7 billion mobile devices, and it can also be used for monitoring physiology, behavior and disease, and patient education.[13–15]

We can use digital health, for example, to optimize exercise training in coronary heart patients or heart failure

**Fig. 1:** Traditional CR (Image source: Institute for Cardiovascular Prevention and Rehabilitation archive)

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patients. We also used digital health tools in the Horizon 2020 project named "Linking Excellence in Biomedical Knowledge and Computational Intelligence Research for Personalized Management of CVD within Personalized Health Care (LINK)." The project is focused on halving the human burden of dementia by 2030. With mutual support and interaction, stakeholders of the medical sector, social sector, and pharmaceuticals and service sector use innovative techniques for personalized diagnosis of dementia, al support for physical and intellectual patient independence, new personalized treatments for neurodegenerative diseases, and new social standards and caregiving approaches, is expected to reduce 40% cardiac care related costs, improving 20% patient's quality of life by 2030.[16]

It is also very important to share information if we have apps for the patient and healthcare professional for the same medical area. For example, how to share decision-making in integrated AF management because the patient app is more focused on self-care, stroke risk, and therapy information while the healthcare professional app is focused on AF education, patient registers, and AF therapy manager based on ESC recommendations (Fig. 2).

We are also thinking about how to apply telerehabilitation methods and to use mobile technology applications and e-health of patients during the CR program and follow-up after they finish their rehabilitation.

We could not be satisfied with the results of prevention and cardiac rehabilitation in Europe and worldwide. Regarding CR, maybe it's time to try to make progress in several new areas at the same time.

As an example of good practice, the experience of the Polyclinic for Prevention of Cardiovascular Diseases and Rehabilitation in Zagreb can be presented, where the outpatient CR program has been successfully implemented for 41 years. The program is based on traditional rehabilitation cardiology principles, but with the introduction of digital health methods and some holistic methods such as receptive music therapy, fractal chromo-music therapy, behavioral cardiology, and biofeedback methods, an improvement in quality of life and functional parameters has been registered, as well as a greater number of patients joining the program. A special quality is also seen in enabling the inclusion in CR of cardiooncology and neurocardiology/cardioneurology patients (Fig. 3).

This combination of standard and new techniques achieved better inclusion of patients in the program, improved program compatibility, and maintained CR positive effect during patient follow-up after the implemented rehabilitation. A combination of these methods would be best for the benefit of rehabilitation patients and the progress of CR.

## Materials and Methods

If we talk about the continuous communication between the brain and the heart, then the influence of art in cardiology is indispensable. What are the experiences in the world and in Croatia and examples of using different art in the treatment of patients? Can we inherit the application of some artistic methods not only in cardiovascular or neurological rehabilitation but also expand it with some new, mainly holistic methods, which in turn contain art in themselves. Let's briefly introduce fractal chromomusic therapy. By combining well-known existing traditional CR methods with digital health methods and some holistic methods that are art in themselves or use artistic techniques, we can achieve something new, something that will help our patients. And in the sense that a larger number of new patients will be included because some new interesting challenges are coming, and in the sense that the program proceeds with a better transfer of patients–medical staff of the CR and ultimately that the functional, work and social results are better, which all contribute to the improvement of the quality of life and the achievement of the goal which we want, which is the "patient in focus." Fractal chromotherapy is a completely new method that simultaneously includes a digital health method in the room, that is, nonlinear dynamics, chaos theory, and biosignal processing, as well as holistic methods of chromotherapy and music therapy.

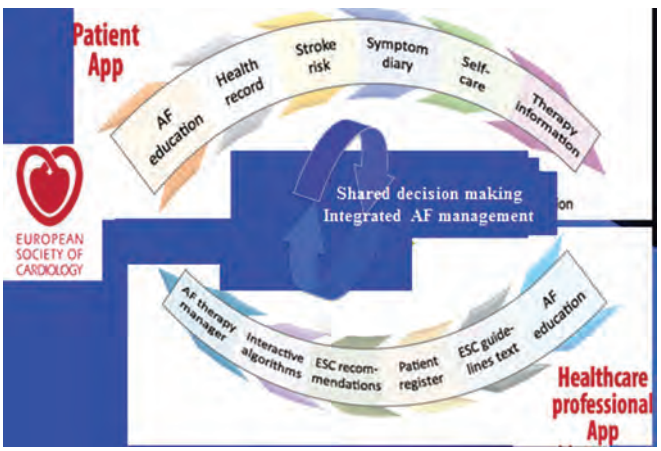


**Fig. 2:** Patient app and healthcare professional app for AF (Image source: ESC)

**Fig. 3:** Fractal chromo-music therapy for patients after ST-segment elevation myocardial infarction and paroxysmal AF (Image source: Institute for Cardiovascular Prevention and Rehabilitation and private collection of Goran Krstačić)

Chromotherapy is a method known since ancient times; recently, it has been attracting attention again. We have all come to know the effect of colors on health, mood, and senses throughout our lives. The most common colors used in chromotherapy are red, green, blue, orange, and yellow, which have a positive effect on our mental health.

Dr John Ott, the pioneer of photobiology, stated, "Light is like food—the wrong kind will make us sick, and the right kind will keep us healthy." Living beings are dependent on light and all matter; every cell of our body consists of energy and emits light. Colors "pass" through our body; they are active and affect our physical and mental health. Light enables us to see. Light also regulates many functions of our body. As the parts of our body, cells, organs, muscles, or nerves have a certain level of vibration, colors have their own frequency and vibration. Thus, the light of certain colors and spectra can have a therapeutic function and enable biological balance.

Red color stimulates circulation, revives the body, strengthens the heart, warms, relieves pain, and helps with anemia, asthma, bronchitis, colds (without elevated temperature), disorders of endocrine glands, weakness, and melancholy. It is not recommended for high blood pressure, inflammatory processes, nerve inflammation, high temperature, irritability, and emotional disorders. The color yellow activates the motor and nervous system, promotes the elimination of toxins from the liver, intestines, and skin and the excretion of bile, and helps with digestive system problems, diabetes, eczema, kidney, liver, and spleen problems. It is not recommended for various inflammations, elevated temperature, mental disorders, and anxiety. The color orange stimulates the work of the thyroid gland, aids digestion and assimilation of calcium, facilitates breathing, and helps with asthma, bronchitis and colds, amenorrhea, kidney problems, being overweight, and rheumatism. The green color is the color of healing because it soothes and heals the mind and body, strengthens muscles and other tissues, and helps with colic, high temperature, ulcers, irritability, insomnia, and disorders of the liver, heart, and nervous system. The color blue refreshes and improves metabolism, disinfects, treats inflammation, reduces temperature and nervous tension, and helps with stomach and intestinal diseases, nervousness, insomnia, excitement, menstrual pain, toothache, inflammation of the tonsils and throat, asthma, and bronchitis.

Music therapy (melotherapy) is a holistic method that uses music as a method of treatment. Using music, we can achieve better physical and mental health of the patient and also improve the spiritual and emotional state. Music therapy is a holistic method used in the treatment of various diseases in >50 countries around the world. It, like chromotherapy, has been known since ancient times, but it especially began to develop in the second half of the 20th century. It includes ethnomusicology, esthetics, and psychology of music. Music therapy affects the autonomic nervous system and contributes to the quality of life and improvement of physical, social, emotional, and spiritual health. It is important to note that music therapy is not a substitute for music education. Some music therapists even consider music therapy a young medical discipline; throughout the centuries, it has used various musical instruments to treat various diseases and improve physical and spiritual conditions. The use of music by the Aborigines in Australia and the playing of the didgeridoo to heal various ailments, as well as the use of gongs for the recovery of the mind and body in the Orient, are well known. In ancient Greece, one of the greatest scientists, Pythagoras, believed that music contributes to health, and he called the healing process "purification." He was also the first founder of the "school of music therapy," in which the effect of music and rhythm on individual functions of the human organism was studied. He called the positive effect of music therapy on the human organism "the music of the spheres." In ancient China, music therapy was represented as well; the Zen teacher Su Ma Tsien wrote about it in his memoirs, who wrote: "Sounds and music move the arteries and veins. The so-called "tone che" has a positive effect on the heart and blood and brings the harmony of good customs and life rituals. Music therapy, as a holistic method and form of expressive art, uses music to improve and maintain physical, mental, and spiritual health, including a wide range of activities, such as listening to music, singing, playing a musical instrument, writing songs, etc. Misconceptions about music therapy, such as "A person must have musical abilities to benefit from music therapy" or "There is a certain type of music that has a greater therapeutic effect than another," are as old as music therapy itself. The use of music therapy in CR enables an additional positive response in psychophysical behavioral parameters, reduces stress, and diverts attention from unpleasant symptoms, especially acute and chronic pain.

"Music comes from the heart of human beings. When emotions are born, they express themselves with sounds, and sounds give birth to music." In conclusion, music therapy, developing the concept of "musical organotropism," evokes and modulates emotions and moods along with changes in the work of the heart, blood pressure, and breathing and enables a healing effect on the mind and body. Music therapy is carried out by trained occupational therapists and music therapists; they design sessions, apply musical improvisation, listen to music, compose songs, and participate in interdisciplinary treatment planning, assessment, and monitoring of the effect on the patient's health. The goal of the occupational therapist/music therapist is to determine and apply music therapy approaches that help restore, maintain, and improve physical and mental health, emotional and social functioning, communication skills, and cognitive skills through musical responses.

In the CR program, the music therapist is a member of the interdisciplinary team and uses receptive music therapy, that is, active and focused listening to selected music, in order to achieve the patient's therapeutic goals. A music therapist uses music and its aspects as an express therapy that improves cognitive functions, motor skills, emotional and affective development, behavior and social skills, and ultimately, the quality of life. With the help of music, he helps people with

health problems individually or in groups. Music therapy is an effective psychological intervention whose effects are reflected in physiological outcomes such as lowering of arterial pressure, heart rate, and breathing rhythm. Brain activity and the autonomic nervous system are the basis, but the scientific explanations of these couplings are new scientific challenges and the subject of further research[17].

## Discussion

Further studies have yet to answer questions about the limitations, as well as recommendations for the application of this type of intervention within a CR program. Digital health has recently become the focus of numerous research and applications in clinical medical practice. It is a multidisciplinary and interdisciplinary field and includes content in biomedicine. Can we. by analyzing the variability of the heart rhythm based on nonlinear methods with chaos theory and string theory, generate a fractal image of the patient's heart? We can! Can we combine this with receptive music therapy, which we have been applying for several years? We can! Well, can we create fractal chromo-music therapy? Something completely new and revolutionary, that combination of music and image, but music and image of the heart of the patient himself. The combination of analysis of the heart rhythm variability of the patient, who is in the CR program, and music and image therapy, the so-called fractal chromo-musicotherapy. This means that we could give the patient the so-called "Three-in-one" therapy, that is, chromotherapy based on the images and colors of his heart generated from the digital data of the electrocardiogram (ECG) signal during the cardiac rehabilitation program (basic ECG, telemetry ECG, or 24-hour ECG recording) and music therapy that is especially for the patient composed by a professional pianist who has extensive experience in music therapy for various forms of illness. Patients listen to "harmonious music" for and from the heart and, at the same time, observe fractal images and colors of their hearts (Fig. 4). This combination of therapies could be particularly useful for a newer group of patients who require cardiac rehabilitation, namely the so-called cardio-oncology patients (patients after chemotherapy or immunotherapy of malignant diseases, which can result in cardiotoxicity, that is, damage to the heart muscle and cardiac structures). This group of patients is already very "vulnerable" because they have already undergone heavy therapy with possible harmful consequences. Therefore, they need some new methods and a gentler approach.[18–23]

**Fig. 4:** Fractal chromo-music therapy in patients with coronary heart disease (Image source: Private collection of Goran Krstačić)

## Conclusion

We hope that a combination of standard and new techniques based on a holistic approach and digital health could achieve better patient involvement in the CR program, better rehabilitation results, and longer sustainability of positive results.

### Clinical Significance

New holistic methods should be a routine part in the program of the CR.

## Author's Contribution

Each author made substantial contributions to the work and interpretation of data for the work.

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REVIEW ARTICLE

# Through the Mediterranean Way of Life to a Healthier Brain

Vida Demarin[1], Jasna Badzak[2], Zivko Miscevic[3], Filip Derke[4]

## Abstract

The Mediterranean diet (MD) is usually consumed among the populations bordering the Mediterranean Sea, representing a model of healthy eating, favorable health status, and better quality of life. Several studies demonstrated the beneficial and preventive role of the MD in the occurrence of many diseases. Therefore, some of them support the favorable effects of the MD on plasma lipid profile: reduction of total and plasma low-density lipoprotein (LDL) cholesterol levels, plasma triglyceride levels, apolipoprotein B, and very-LDL concentrations, and an increase in plasma high-density lipoprotein (HDL) cholesterol levels. This effect is associated with increased plasma antioxidant capacity, improved endothelial function, reduced insulin resistance, and reduced incidence of metabolic syndrome. The beneficial impact of fish consumption on the risk of cardiovascular diseases (CVDs) is the result of the synergistic effects of nutrients in fish. Fish is considered an excellent source of protein with low saturated fat, nutritious trace elements, long-chain ω-3 polyunsaturated fatty acids (LCn3PUFAs), and vitamins D and B. Fish consumption may be inversely associated with ischemic stroke but not with hemorrhagic stroke. Total stroke risk reduction (RR) was statistically significant for fish intake once per week, while the risk of stroke was lowered by 31% in individuals who ate fish five times or more per week. Greater adherence to the MD is associated with a significant reduction in overall mortality, mortality from CVDs and stroke, incidence of or mortality from cancer, and incidence of Parkinson's disease and Alzheimer's disease (AD) and mild cognitive impairment.

**Keywords:** Brain health, Mediterranean diet, Stroke.

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Brain diseases are frequent, causing disability and changes in the quality of life of the patients and their families, as well as having a huge social and financial burden. According to the European Brain Council, the cost of brain disorders in Europe is 798 billion Euros per year, which is one-third of the whole health expenditure per year, with stroke and dementia contributing a great deal to this situation.

Adequate blood supply to the brain is a prerequisite for brain health with control and management of behavioral, environmental, and metabolic risk factors. In spite of huge developments in the management of stroke, with stroke units, thrombolytic therapy, endovascular treatment, and neurosurgical and vascular surgical treatment, primary prevention of stroke is still one of the most important contributors to brain health.

As Professor Hans-Christoph Diener pointed out, there have been two recent notable publications.[1] One was burden-of-disease published in The Lancet,[2] and the other was the case-control INTERSTROKE study with >27,000 patients.[3] Both studies clearly show that 90% of the risk for stroke is due to treatable risk factors. "I sometimes think we have the priorities wrong; we should contemplate much more on the primary prevention of stroke rather than on treating and secondary stroke prevention."

Obviously, over the years, we failed to fill out several gaps in stroke prevention. Despite efforts to modify health behavior, the knowledge about stroke, its risk factors, and its symptoms is low, which means there is still a lack of awareness. Then, "low-risk" individuals are falsely reassured and therefore are not motivated. The management of hypertension is not properly addressed. Important risk factors for stroke are not considered in screening (i.e., sedentary lifestyle and alcohol intake). The specificity of cardiovascular disease (CVD) prediction algorithms is low due to the fact they may not be applicable to all races. There is also a cost barrier for some

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in high-risk strategies, a lack of effectiveness in screening high-risk individuals, and already created population-wide strategies that have not been implemented.[3,4]

The six most important keys to a healthy brain are in our hands: healthy nutrition [Mediterranean diet (MD)], regular physical activity, stress management, "brain fitness," adequate sleep patterns, and social inclusion.

"The importance of nutrition in preserving brain health has been a subject of investigation for many years, pointing out the role of polyunsaturated fatty acids (FAs) from fish consumption, abundance of fruits and vegetables, whole grains, olive oil, and red wine, what are all main ingredients of a MD. Adherence to this diet leads to improved endothelial function, increased plasma antioxidant capacity, and reduction of insulin resistance, which contributes to the prevention of stroke, neurodegenerative disorders, metabolic syndrome, etc.

Regular physical activity increases the level of brain-derived neurotrophic factor (BDNF), which is of utmost importance for cognitive functioning and decreased risk of depression, as well as of stroke."

"Control and management of stress in daily living is the third key in preserving a healthy brain, especially important nowadays when human circuits are overloaded, and people are bombarded with constantly changing mental challenges. It is estimated that we encounter a thousand times more events per year than our great-grandparents did, but the time available for decision-making remains the same or even less. In the era of a person-centered approach, techniques for stress relief should be individually tailored, and stress should be properly managed."[5,6]

"And the fourth key, again something that we can practice by ourselves, is an array of different brain fitness tasks which challenge our brain and contribute greatly to a healthy brain.[7,8] A minimum of 7 hours of daily sleep seems to be necessary for proper cognitive and behavioral functioning. The brain reorganizes and recharges itself in relation to short- and long-term memory, and the glymphatic system cleans the waste products.[9,10] Social inclusion, maintaining emotional connections with family and friends, with continuous exposure to new stimulating activities out of comfort zones is of utmost importance for enhancing neuroplasticity."[11,12]

In this article, we will more closely look at two of several keys to preserving brain health: the benefits of the MD and physical exercise with emphasis on preventing stroke, dementia, and migraine.

## Healthy Food Intake Can Prevent Stroke

The combination of healthy lifestyle factors is associated with a lower risk of coronary heart disease (CHD), diabetes, and total CVD. A prospective cohort study[13] among 43,685 men from the Health Professionals Follow-up Study and 71,243 women from the Nurses' Health Study evaluated diet and other lifestyle factors. Low-risk lifestyle was defined as not smoking, having a body mass index of <25 kg/m$^2$, >30 minutes/day of moderate activity, modest alcohol consumption (men, 5–30 gm/day; women, 5–15 gm/day), and scoring within the top 40% of a healthy diet score. There were 1,559 strokes (853 ischemic, 278 hemorrhagic) among women and 994 strokes (600 ischemic and 161 hemorrhagic) among men during follow-up. Women with all five low-risk factors had a relative risk of 0.21 [95% confidence interval (CI), 0.12–0.36] in total and 0.19 (95% CI, 0.09–0.40) for ischemic stroke compared to women who had none of these factors. Among men, the relative risks were 0.31 (95% CI, 0.19–0.53) in total and 0.20 (95% CI, 0.10–0.42) for ischemic stroke for the same comparison. Among the women, 47% (95% CI, 18–69) of total and 54% (95% CI, 15–78) of ischemic stroke cases were attributable to lack of adherence to a low-risk lifestyle; among the men, 35% (95% CI, 7–58) of total and 52% (95% CI, 19–75) of ischemic stroke may have been prevented. A low-risk lifestyle that is associated with a reduced risk of multiple chronic diseases also may be beneficial in the prevention of stroke, especially ischemic stroke. Consumption of plant foods and dairy and meat products may moderate increases in blood pressure. The association of dietary intake with the 15-year incidence of elevated blood was evaluated in the Coronary Artery Risk Development in Young Adults Study[14] of 4,304 participants. Plant food intake (whole grains, refined grains, fruit, vegetables, nuts, or legumes) was inversely related to elevated blood pressure (EBP) after adjustment for age, sex, race, center, energy intake, CVD risk factors, and other potential confounding factors. Compared with quintile 1, the relative hazards of EBP for quintiles 2–5 of plant food intake were 0.83 (95% CI, 0.68–1.01), 0.83 (0.67–1.02), 0.82 (0.65–1.03), and 0.64 (0.53–0.90). Dairy intake was not related to EBP, and positive dose-response relations for EBP were observed across increasing quintiles of meat intake. In subgroup analyses, the risk of EBP was positively associated with red and processed meat intake, whereas it was inversely associated with intakes of whole grain, fruit, nuts, and milk. These findings are consistent with a beneficial effect of plant food intake and an adverse effect of meat intake on blood pressure. Increased consumption of fruits and vegetables has been shown to be associated with a reduced risk of stroke in most epidemiological studies, although the extent of the association is uncertain. Meta-analysis of cohort studies[15] quantitatively assessed the relationship between fruit and vegetable intake and incidence of stroke. Groups included 257,551 individuals (4,917 stroke events) with an average follow-up of 13 years. Compared with individuals who had less than three servings of fruit and vegetables per day, the pooled relative risk of stroke was 0.89 (95% CI, 0.83–0.97) for those with three to five servings per day and 0.74 (0.69–0.79) for those with more than five servings per day. Subgroup analyses showed that fruit and vegetables had a significant protective effect on both ischemic and hemorrhagic stroke. Increased fruit and vegetable intake in the range commonly consumed is associated with a reduced risk of stroke. Results provide strong support for the recommendations to consume more than five servings of fruit and vegetables per day, which is likely to cause a major reduction in strokes.

## Mediterranean Diet (MD)

"Several studies demonstrated the beneficial and preventive role of the MD in the occurrence of CVDs, chronic neurodegenerative diseases and neoplasms, obesity, and diabetes. In randomized intervention trials, the MD improved endothelial function and significantly reduced waist circumference, plasma glucose, serum insulin, and homeostasis model assessment score in metabolic syndrome."[16,17]

Meta-analysis of 12 studies[18] ($n = 1,574,299$) evaluating the association between adherence to a MD and the mortality and incidence of major CVD and chronic neurodegenerative diseases showed that greater adherence to a MD was associated with a significant reduction in overall mortality (9%), mortality from CVD (9%), incidence of or mortality from cancer (6%), and incidence of Parkinson's disease and Alzheimer's disease (AD) (13%).[18] MD and Incidence and Mortality from CHD and Stroke in Women study[19] was performed in 4,886 women with no history of CVD and diabetes (Nurses' Health Study) and followed up. Alternate MD Score, focusing on higher consumption of plant foods, including plant proteins, monounsaturated fat, fish, and lower consumption of animal products and saturated fat, ranged from 0 to 9, with a higher score representing closer resemblance to the MD. Results demonstrated 2391 incident cases of CHD (1,597 nonfatal and 794 fatal) and 1,763 incident cases of stroke (959 cases-ischemic, 329 cases of hemorrhagic, and 475 cases were unclassified). Of all strokes, 1,480 cases were nonfatal, and 283 cases were fatal. There were 1,077 CVD deaths (fatal CHD and strokes combined).[20] Long-chain ω-3 polyunsaturated FAs (LCn3PUFAs), such as eicosapentaenoic acids, docosapentaenoic acid, and docosahexaenoic acid in fish, are the key nutrients responsible for the cardioprotective benefits and CVD prevention. The beneficial effects of fish consumption on the risk of CVD are derived from synergistic effects among nutrients in fish. Fish is considered to be an excellent source of proteins with low saturated fat (taurine, arginine, and glutamine are known to regulate cardiovascular function); some nutritious trace elements (selenium and calcium, which may directly or indirectly provide cardiovascular benefits, alone or in combination with LCn3PUFAs and vitamins (vitamin D and B). Interactions between LCn3PUFAs and other nutrients, including nutritious trace elements and vitamins and amino acids, are important in reducing the risk of CVD. Overall, a favorable effect is observed on lipid profiles, threshold for arrhythmias, platelet activity, inflammation and endothelial function, atherosclerosis, and hypertension. The American Heart Association recommends eating fish (particularly fatty fish) at least two times a week. Fish consumption may be inversely associated with ischemic stroke but not with hemorrhagic stroke because of the potential antiplatelet aggregation property of LCn3PUFAs. A meta-analysis of eight independent prospective cohort studies, which included 200,575 subjects and 3,491 stroke events, showed that individuals with higher fish intake had a lower risk of total stroke compared with those who never consumed fish or ate fish less than once per month. The reduction in risk of total stroke was statistically significant for fish intake once per week; for individuals who ate fish five times or more per week, the risk of stroke was lowered by 31%. The risk of ischemic stroke was also significantly reduced by eating fish twice per month. It has been suggested that broiled and baked fish, but not fried fish and fish sandwiches, are associated with a lower incidence of atrial fibrillation and ischemic heart disease. Cardiovascular Health Study[21] evaluated 3,660 subjects aged over 65 who underwent an magnetic resonance imaging (MRI) scan to associate fish consumption and risk of subclinical brain abnormalities on MRI in older adults. Among older adults, modest consumption of tuna/other fish, but not fried fish, was associated with a lower prevalence of subclinical infarcts and white matter abnormalities on MRI examinations. Tuna or other fish consumption was also associated with trends toward lower incidence of subclinical infarcts and with better white matter grade. No significant associations were found between fried fish consumption and any subclinical brain abnormalities. After adjustment for multiple risk factors, the risk of having one or more prevalent subclinical infarcts was lower among those consuming tuna or other fish more than or equal to three times per week, compared to more than once per month. The risk reduction (RR) in those consuming tuna/other fish more than or equal to three times per week was 0.56 compared to more than once per month. Each serving/week of tuna/other fish was associated with trends toward an 11% lower RR of any incident subclinical infarct and a 12% lower RR of each additional multiple infarct. Consumption of ω-3 FAs is not associated with a reduction in carotid atherosclerosis, according to the Genetics of Coronary Artery Disease in Alaska Natives Study.[22] The study included a population-based sample that underwent ultrasound assessment of carotid atherosclerosis. Intima-media thickness (IMT) of the far wall of the distal common carotid arteries and plaque score (number of segments containing plaque) were assessed. Mean consumption of total ω-3 FAs was 4. 6 gm/day in those without and 5.07 gm/day in those with plaque. The presence and extent of plaque were unrelated to the intake of C20–22 ω-3 FAs or total ω-3 FAs. The odds of plaque rose significantly with quartiles of palmitic and stearic acid intake. The extent of plaque (or plaque score) was also associated with a higher percentage intake of palmitic acid. IMT was negatively associated with grams of C20–22 ω-3 FAs, total ω-3, palmitate, and stearate consumed. Dietary intake of ω-3 FAs in a moderate-to-high range does not appear to be associated with reduced plaque but is negatively associated with IMT. The presence and extent of carotid atherosclerosis among Eskimos is higher with increasing consumption of saturated FAs. No significant differences were seen in the prevalence of atherosclerotic plaque or mean plaque score with increasing quartiles of dietary intake of either total ω-3 FAs or C20–22 ω-3 FAs. When analyzed as a percentage of total fat intake, C20–22 consumption and

total ω-3 FA consumption were not related to average IMT. When the analyses were adjusted for age and gender, positive associations were observed between the percentage of fat intake from palmitic acid or stearic acid and the presence of plaque and plaque score. When analyzed as daily intake in grams, higher quartiles of intake of either palmitate or stearate were associated with significantly higher average IMT when adjusted for age and gender.[22]

In the randomized, multicenter trial of a MD in primary prevention of cardiovascular events in Spain, randomly assigned participants who were at high CV risk to one of three diets: a MD supplemented with extra virgin olive oil, the other supplemented with mixed nuts or a control diet (advised to reduce dietary fat), included 7,447 persons (aged 55–80 years), followed up during 5 years. MD with extra virgin olive oil and the one supplemented with nuts reduced the incidence of major CV events.[23]

Greater adherence to the MD was associated with a lower risk of stroke in a United Kingdom white population. For the first time in the literature, the associations between the MD score in those at both low and high risk of CVD were also investigated. Although the findings in this study were driven by associations in women, they have implications for the general public and clinicians for stroke prevention.[24]

## Tea Consumption and Risk of Stroke

A meta-analysis of green and black tea consumption and risk of stroke[25] included data from nine studies involving 4,378 strokes among 194,965 individuals. The main outcome assessed was the occurrence of fatal or nonfatal stroke. The summary effect associated with the consumption of more than or equal to three cups of tea (green or black) per day was calculated. Regardless of their country of origin, individuals consuming more than or equal to three cups of tea per day had a 21% lower risk of stroke than those consuming less than one cup per day (absolute RR, 0.79; CI, 0.73–0.85). The results were consistent across green and black tea. The types of catechins differ between green and black tea; their total amounts are comparable because both black and green tea are derived from the same source: the catechins produced within the *Camelia sinensis* plant, and both have demonstrated effects on vascular function. Catechin ingestion blocked an increase in serum nitric oxide concentration in rats after reperfusion, and tea has a demonstrated effect on endothelial function. Theanine is readily bioavailable from both green and black tea; crosses the blood–brain barrier and has effects on brain function; contains the glutamate molecule, and it might reduce glutamate-related endothelial damage. Regular tea consumption, instead of preventing evident stroke, may reduce the postischemic damage to a level that results in subclinical ischemia or hidden strokes. This would result in the diagnosis of stroke only in individuals with more extensive postischemic damage or a greater stroke volume.[26–28]

Many epidemiologic studies have been conducted and summarized in five meta-analyses on either tea consumption or flavonoid consumption and CVD or the subset of stroke. The strength of this evidence supports the hypothesis that tea consumption might lower the risk of stroke.[29–31]

## Vitamin C Lowers the Risk of Stroke

A 3-year intervention study[32] showed that vitamin C consumption is associated with less progression in carotid IMT in elderly men. In the study, IMT of the carotid artery and diet in elderly men was assessed. Men were randomly assigned to one of four groups: dietary intervention, ω-3 supplementation, both or neither. Results previously showed that ω-3 supplementation did not influence the IMT; thus, the dietary intervention and no dietary intervention groups were pooled. The dietary intervention group had less progression in the carotid IMT compared with the controls. This group increased their daily vitamin C intake and intake of fruit, berries, and vegetables. Increased intake of vitamin C and of fruit and berries was inversely associated with IMT progression.

Findings from one meta-analysis suggest significant inverse dose-response relationships between dietary vitamin C intake, circulating vitamin C, and risk of stroke. In view of evidence from these randomized controlled trials, it is premature to recommend supplementation of vitamin C (or other antioxidants) to prevent stroke, and the prevention of this disease should largely lie in the modification of lifestyle habits, as well as effective therapies lowering risk factors for stroke.[33]

## Consumption of Chocolate and Risk of Stroke

Consumption of chocolate has often been hypothesized to reduce the risk of CVD due to chocolate's high levels of stearic acid and antioxidant flavonoids. Reviewing studies[34] on chocolate and stroke involving 44,489 subjects who ate one serving of chocolate per week showed that subjects who consumed chocolate were less likely to have a stroke than people who ate no chocolate; observed stroke RR was 22%. People who consumed 50 gm of chocolate once a week were less likely to die following a stroke than people who did not eat chocolate by 46%.[35] Debate still lingers regarding the true long-term beneficial cardiovascular effects of chocolate overall. The flavonoid content of chocolate may reduce the risk of cardiovascular mortality. Review of MEDLINE publications[36] for experimental, observational, and clinical studies of relations between cocoa, cacao, chocolate, stearic acid, flavonoids (including flavonols, flavanols, catechins, epicatechins, and procyanidins), and the risk of CVD (CHD, stroke) showed that cocoa and chocolate may exert beneficial effects on cardiovascular risk *via* effects on lowering blood pressure, anti-inflammation, antiplatelet function, higher high-density lipoprotein (HDL), decreased low-density lipoprotein (LDL) oxidation.

Several studies were done to investigate the association between chocolate consumption and the risk of stroke in men and women and to conduct a meta-analysis to summarize available evidence from prospective studies of chocolate consumption and stroke. These findings suggest that moderate chocolate consumption may lower the risk of stroke.[37,38]

Another meta-analysis suggests that chocolate consumption confers reduced risks of CHD, stroke, and diabetes. Consuming chocolate in moderation (1–6 servings/week) may be optimal for the prevention of these burdensome diseases.[39]

In the Japanese study, during a median follow-up of 12.9 years, chocolate consumption was associated with a significantly lower risk of stroke in women [hazard ratio (HR) = 0.84; 95% CI, 0.71–0.99]. However, the association in men was not significant (HR = 0.94; 95% CI, 0.80–1.10). In addition, the association did not vary by stroke subtypes in either men or women.[40]

## Physical Activity in Primary Prevention of Stroke

*Mens sana in corpore sano*. This famous sentence has been around for almost 2000 years. Back in the 1st and 2nd century AD, Decimus Iunius Iuvenalis, a Roman poet, spoke of health, mental and physical, and their dependence on one another. But it was not until the 1990s that science allowed us to find proof for this idea, and until the discovery of neurotrophic factors, which changed the way physical activity and brain plasticity are viewed. In 1986, Rita Levi Montalcini and Stanly Cohen received a Nobel Prize in medicine for the discovery of neurotrophins, proteins belonging to a group of growth factors with special effects on neurons. They signal nerve cells to grow, survive, and differentiate. One neurotrophic factor in particular, the BDNF, which is important for long-term memory, affects neurons in central and peripheral nervous system, helps survival of existing neurons, growth and differentiation of new neurons and synapses, and its secretion is encouraged by physical activity.

Epidemiological and prospective studies have shown that physical activity enhances cognitive and brain function and protects against the development of neurodegenerative diseases. Extensive research is going on to prove biological mechanisms that underlie such beneficial effects. Multidomain interventions could improve or maintain cognitive function in at-risk elderly people (FINGER study).[41] Prevention is the key. Greater gray matter volume, measured by MRI, was found with higher aerobic activity, pointing out that it might be neuroprotective.

Scientists for centuries believed in the possibility of the human brain to change. William James, in 1890, was among the first to suggest that the human brain is capable of continuous functional changes, which he showed in his work "Principles of Psychology."[42] It is important to keep our brain healthy as well as the body. Brain health has become a very important and recognized public health issue with a growing and aging population. Interventions are necessary from middle age further on where we face a growing incidence of AD and other neurodegenerative disorders. Many recent studies have shown the benefits of exercise in aging populations, not only on physical health but also on brain health and functions. Exercise has become fundamental in improving and maintaining cognitive functions.[43]

Physical activity is associated with a lower risk of cognitive impairment, AD, and dementia in general.[44] Also, a retrospective analysis showed that physical activity and behavioral stimulation reduced the risk of developing AD.[45] During the 1990s, popular belief was that exercise's positive effect on the brain comes from its positive effect on overall health, especially among aged subjects. Today, we are aware of the existence of a neurobiological basis for these benefits, and we know that exercise has a direct effect on the molecular structure of the brain. The most important and probably the most studied is the BDNF, which is held responsible for the survival and growth of many neuronal subtypes, including glutamatergic neurons, synaptic efficacy, neuronal connectivity, and use-dependent plasticity.[46]

Neurotrophin-mediated response to exercise is not restricted to motor-sensory systems as researchers expected but showed increased levels of BDNF in the hippocampus. The hippocampus is a highly plastic structure associated with higher cognitive function rather than motor activity. New hippocampal neurons make specific contributions to learning and memory, in part as a result of their unique neural circuitry.[47] Human studies have shown that exercise improves brain plasticity. Learning is a high-order brain plasticity activity that increases BDNF gene expression, and BDNF, in turn, facilitates learning.[48]

Peripheral mechanisms show growing importance in activity-dependent induced changes in levels of BDNF messenger RNA in the brain. Components influencing this peripheral control include estrogen, corticosterone, and insulin-like growth factor-1.

Steroid hormones such as estrogen influence brain aging, particularly in post-menopausal women. Reduced levels of estrogen seem to compromise neuronal function, survival of neurons, and decreased hippocampal availability of BDNF.[49] Just like estrogen has a positive effect on neuroplasticity; there are some factors causing negative neuroplasticity. Prolonged exposure to stress causes elevated levels of stress hormones (i.e., corticosteroids), which can be harmful to neuronal survival in the hippocampus. As a response to stress (acute and chronic), neurons undergo morphological changes, dendritic atrophy, and spine reduction, which have a negative impact on brain plasticity.[50] It is a common belief that exercise relieves stress and reduces depression and anxiety in humans.[51]

Literature shows that experience and behavior activate brain plasticity mechanisms and remodel neuronal circuitry in the brain. Exercises and behavioral enrichment paradigms,

such as environmental enrichment, rehabilitation training, and learning, affect common endpoints in the brain, including regulation of growth factors, neurogenesis, and structural changes. Similarities between these effects and exercise support the idea of existing common mechanisms regulating plasticity.[53]

Exercise is a simple, free, and widely practiced activity that activates molecular cascades participating in neuroplasticity. It induces BDNF encoding neurogenesis and enhances brain vascularization, functional changes in neuronal structure, and neuronal resistance to injury. Exercise increases the level of hippocampal BDNF, a brain region responsible for learning and memory. By inducing BDNF and other molecules, exercise strengthens neuronal structure, facilitates synaptic transmission, and prepares activated cells for encoding.

There are a number of recent studies investigating the role of physical activity in primary and secondary stroke prevention, demonstrating its positive effect.[52–54] The research is going on, and day by day, more convincing data is becoming available on this topic.

## Possibilities of Dementia Prevention

Dementia represents one of the greatest global challenges for health and social care in this century. Around >50 million people worldwide suffer from dementia, and this number is predicted to triple by 2050. Aging is often associated with cognitive impairment. Therefore, the prevention of cognitive impairment is imperative.

"The Lancet Commission on dementia aimed to review the best available evidence and produce recommendations on how to best manage, or even prevent, the dementia epidemic.

The risk of AD, the most common form of dementia, is in large part modulated by genetics, but prevalence is decreasing in many high-income countries; hence, modifiable risk factors are also at work. Identifying and tackling these factors is an urgent research priority, for which the network is a step in the right direction."

"The Lancet Commission presented a new life-course model showing potentially modifiable and nonmodifiable risk factors for dementia."[55] If less education in early life is eliminated, the risk of new dementia cases is decreased by 8%. In mid-life, we should target hearing loss, reducing new cases by 3%, hypertension by 2%, and obesity by 1%. In late life, the elimination of further risk factors should be in our focus: smoking (5%), depression (4%), physical inactivity (3%), social isolation (2%), and diabetes (1%), what altogether reduce the risk of dementia by 35% or by other words, each third dementia could be prevented by tackling nine risk-factors during life-span.[55]

"Hence, a key recommendation of the Commission: "be ambitious about prevention" is focusing on interventions to build up resilience and brain reserve, to activate neuroplasticity, detect and treat risk factors, and to live healthier lifestyles."

Stroke and dementia have many common risk factors, and lifestyle interventions and modifications could contribute to the reduction and prevention of both diseases. Our role is, by no means, raising awareness and spreading knowledge wherever and whenever possible.[56]

## Lifestyle and Primary Headache

Another very important neurological disorder, ruining the quality of life of a person as well as of family members, is migraine. Migraine ranks in the top 20 of the world's most disabling medical illnesses. Over 10% of the population, including children, suffers from migraine. As many as 50 million Europeans suffer from headaches to migraine, for many with handicapping effects.[57] The influence of environmental factors on the clinical manifestation of migraine has been a matter of extensive debate over the past decades. Migraineurs commonly report foods, alcohol, meteorologic or atmospheric changes, and exposure to light, sounds, or odors as factors that trigger or aggravate their migraine attacks. Considering lifestyle factors, the most frequently reported are emotional stress, depression, too little or too much sleep, exercise or overactivity, and skipping meals and fasting. Following foods that are sometimes related to increased sensitivity to migraine attacks are chocolate, nuts, peanut butter, cheese, yogurt, sour cream, red wine or other alcoholic drinks, processed meats, and monosodium glutamate. For physical causes, menstrual cycle, or other hormonal changes, and in the group of environmental factors, weather or seasonal changes travel through different time zones, odors or pollution, and bright light–to mention just some of them.[58–62]

Having in mind the famous sentence of Sir William Richard Gowers, "When all has been said that can be, mystery still envelops the mechanism of migraine," some simple lifestyle modifications could be beneficial.

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ORIGINAL RESEARCH

# Ecology in Judaism

Kotel Dadon

## Abstract

Ecology has become one of the greatest moral and existential crises of our time because of the environmental disasters we have experienced in recent years. Scientists predict that these disasters will become more frequent and even worse. The world is changing, and therefore, it is our duty to get involved and contribute to the global effort for a better environment.

This article is a modest contribution to these efforts by examining Judaism's religious, legal, and moral standpoint on the ecological crisis for a better future.

The first part of the article discusses the various ideological approaches to ecology, the anthropocentric and the biocentric, and then defines the place of the Jewish theocentric approach in the ecological discourse.

The next part deals with ecology in the Bible by analyzing some commandments from the Torah that contain an ecological argument and support the moral idea of preserving the environment. These include the Sabbath commandment, the Sabbath year, and the prohibition against wasteful destruction.

The final part of the article analyzes ecology in rabbinic literature, focusing on various precepts and commandments in Jewish law in the area of tort law and neighbor relations that were enacted to prevent various types of damage and pollution (noise, air, or water) that can be caused by industrial production. Commandments that maintain the balance between the need for industrial and economic production and optimal living conditions for residents.

In this treatise, the author uses many sources from rabbinic literature from the Talmudic period through the Middle Ages to modern times.

**Keywords:** Ecology, Environment, Judaism, Rabbi, Torah.

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## Introduction

Climate change and the resulting environmental disasters are among the greatest moral and existential crises of our time.

Even those who used to doubt the existence of a profound crisis in the relationship between man and the environment and were satisfied with routine explanations for unusual natural events cannot remain indifferent to what is happening.

Here are some of the extreme events the world has experienced in recent years: huge fires around the world, unusual storms and floods, and warming culminating in days of extreme heat stress occurring with great frequency; this is when scientists predict these events will become more frequent and even worse. The oceans, which are an area of wild nature and a major source of life for the animals in them and for life on Earth in general, are absorbing most of the warming and are in real danger (some species that require low temperatures are going extinct, and others, including invasive species, are thriving and causing further changes in the ecosystem). Rainforests, whose importance to life on Earth is enormous (they cover about 7% of the Earth's land surface but are responsible for 28% of oxygen production), are under serious threat. At the same time, humans continue to damage natural resources by exploiting and polluting them due to greed, problematic consumerism, and polluting eating habits that result in enormous waste production.

This severe damage to nature began with the Industrial Revolution in the 18th century and is mainly due to short-term, selfish economic behavior. Through these actions, humans are causing accelerated destruction of the Earth's wonderful natural world. Some claim that the environmental crisis is due to religious reasons and even consider the Judeo-Christian culture as the main culprit.

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The purpose of this article is to examine, through various sources from Jewish law and Jewish thought, Judaism's approach to ecology, both on the conceptual and legal levels of environmental protection. This effort is intended to serve as a source of inspiration for educational activities in this area and hopefully influence people in general and decision-makers in particular.

## Ideological Approaches to Ecology

It is customary to refer to two contrasting general approaches to ecology when considering man's place in the world. One view is known as the anthropocentric view, according to which man is central. All of nature is meant for him and should serve him, so he has a duty to handle natural resources and the world in general with great wisdom and responsibility to ensure the existence of the human race. Opponents of this concept, on the other hand, argue that man's consideration of nature from the perspective of property leads to an irresponsible and dangerous utilitarian approach; moreover, man will not preserve an environment that he believes makes no direct contribution to man's benefit, such as the deserts and the poles of the Earth.

In his famous essay, Lynn White Jr asserts that the roots of the environmental crisis lie in Judeo-Christian culture, whose attitude toward creation is domineering-predatory.[1]

A stormy polemic ensued in the wake of his article. White's basic assumption is that "our environmental perception is deeply influenced by beliefs about human nature and the destiny of the human race, that is, by religion." He sees the victory of Christianity over paganism in Europe as the cause of the ecological crisis currently facing humanity.[2]

On the other hand, there is the biocentric approach, which focuses on nature, and man is only one of many manifestations of nature.

In this concept, also called "deep ecology," man is just another species among the various species in nature, with no priority over other species. According to this concept, nature's right to its various components (living, plant, and inanimate) derives from its very existence and is unrelated to the benefits it provides to humans.

This approach gives the universe an almost "divine" value and refers to its sacredness. Spinoza, who is known to have elevated all of nature to the level of God, Deus sive Natura, is very popular among the followers of this approach.

Opponents of this approach see it as favoring wild nature over human culture and rationality, that is, favoring nature over man.

Others oppose it for sociological–philosophical–religious reasons; their fear of extreme biocentric environmental movements stems from the fact that they give nature a divine status and are, therefore, seen as neo-pagan.[3]

For other opponents, the aversion to a biocentric environmental ethic stems from the fact that extreme biocentric approaches have been part of the ideology of history's greatest man-haters, such as the example of the National Socialist movement in Germany, which adopted the biocentric environmental approach and was the first to enact systematic and comprehensive legislation to protect animals and nature.[4]

## The Place of the Jewish Approach in the Ecological Discourse

In Judaism, we can find support for both approaches. Already, the story of the creation of the world, at the end of which God creates man as the crown of creation "in the image of God"[5] supports the anthropocentric approach. In the sequel, man gains dominion over nature:

"God blessed them, and God said to them, Be fertile and increase, fill the Earth, and master it: and rule the fish of the sea, the birds of the sky, and all the living things that creep on Earth. God said, "See, I give you every seed-bearing plant that is upon all the earth, and every tree that has seed-bearing fruit; they shall be yours for food." (Genesis 1:28–29).

In his article, White (1967, 1205) uses this biblical commandment as evidence that the Judeo-Christian tradition is anthropocentric, placing man above all creation and, therefore, responsible for all the failures that have led to the depletion of the planet's natural resources.

The poet of the Psalms defines man's closeness to God and his superior position as ruler over nature as follows:

"You have made him master over your handiwork, laying the world at his feet, sheep and oxen, all of them, and wild beasts, too; the birds of the heavens, the fish of the sea, whatever travels the paths of the seas." (Psalms 8:7–9).

Some Jewish philosophers, such as Rabbi Saadia Gaon (892–942), point out that man is the goal of all creation.[6]

On the other hand, various Jewish sources actually support the biocentric approach. For example, the inferiority of man to the universe, as expressed in the Book of Job[7] and elsewhere. Also, some Jewish philosophers such as Maimonides (R Moshe ben Maimon, 1135–1204) hold that the creation of nature and all living things have an independent purpose that is not necessarily related to man.[8]

Jewish environmental ethics is between the extremes of the biocentric and anthropocentric approaches as the sources go in both directions. The Jewish approach places God at the center of creation (theocentric). This position attributes ownership of the world to God, as it is written, "For the earth is Mine" (Leviticus 25:23), and elsewhere, "The earth is the LORD's and all that it holds, the world and its inhabitants." (Psalms 24:1).[9]

The Earth is not subject to man's absolute ownership, but it was given to him with the obligation "to "use and protect" (Genesis 2:15) its nature, a sustainable development that preserves it.[10] Man is but a guest in God's world, and as a guest, he is bound by proper rules of etiquette and conduct in relation to the world.[11]

Man's ecological duty to protect his environment is based on both anthropocentric and biocentric arguments. On the one hand, nature is to serve man, not because of his

superiority, but because only with the help and through man, who was created in the image of God, can the various values for which the world was created be fulfilled.

Judaism places reason and law above nature and, therefore, grants man special treatment and status. Judaism recognizes man as a unique being, not only because he is a rational being, but especially because he is a being with freedom of choice,[12] an ability that gives him his dignity and status.

Man can use his uniqueness and superiority over nature in a selfish and destructive way or in a responsible and respectful way; the choice is in his hands. Contrary to White's arguments, control over nature does not mean predatory and destructive control, as Rabbi Kook (R Avraham Yitzhak haKohen Kook, 1865–1935) explains:

> "There can be no doubt to any enlightened or thoughtful person that the "dominion" mentioned in the Bible in the phrase, "fill the earth and master it; and rule the fish of the sea, the birds of the sky, and all the living things that creep on earth." (Genesis 1:28) is not the dominion of a tyrant who deals harshly with his people and servants in order to achieve his own personal desires and whims. It would be unthinkable to legislate so repugnant a subjugation and have it forever engraved upon the world of God, who is good to all and whose mercy extends to all He has created, as is written, "the earth is founded upon mercy" (Ps. 89:3).[13]

An external proof of the reverence Rabbi Kook had for nature is the following story told by his student Rabbi Aryeh Levin (1885–1969):

> "I recall the early days, from 1905 onward, when it was granted me by the grace of the blessed Lord to go up to the holy land, and I came to Jaffa. There, I first went to visit our great master, R Abraham Isaac Kook (of blessed memory), who received me with good cheer, as it was his hallowed custom to receive everyone. We chatted together on themes of Torah study. After the afternoon service, he went out, as was his custom, to stroll a bit in the fields and gather his thoughts, and I went along. On the way, I plucked some branch or flower. Our great master was taken aback, and then he told me gently, "Believe me. In all my days, I have taken care never to pluck a blade of grass or flower needlessly when it had the ability to grow or blossom. You know the teaching of the Sages that there is not a single blade of grass below, here on Earth, which does not have a heavenly force telling it "grow!" Every sprout and leaf of grass says something conveys some meaning. Every stone whispers some inner, hidden message in the silence. Every creation utters its song (in praise of the Creator)." Those words, spoken from a pure and holy heart, engraved themselves deeply on my heart. From that time on, I began to feel a strong sense of compassion for everything."[14]

The leading verse in the context of the obligation to preserve and protect the environment appears already at the time when man was in the Garden of Eden:

"God settled the Human in the garden of Eden to use and protect it" (Genesis 2:15).

This imperative contains the eternal conflict between the development of the world and the protection of the environment. Man has taken on two tasks: on the one hand, he is to cultivate the land in order to advance technological and industrial development for his needs. On the other hand, man is required to preserve creation and observe nature wisely. Only these two values together can bring man to the ideal use of what has been created in his honor.

Our experience shows that man's journey of exploration in nature has succeeded in discovering many secrets of nature with his intelligence, but together with the exploitation of these secrets during the technological development of nature, he has done great harm to natural resources and the environment.

When we hurt the environment, we are actually hurting ourselves. Unfortunately, some selfish people mistakenly mix private and public spheres. An important lesson in this regard can be drawn from the following Tosefta:

> "It happened that a certain person was removing stones from his ground onto public ground when a pious man found him and said, "Fool, why do you remove stones from ground which is not yours to ground which is yours?" The man laughed at him. Sometime later, he was compelled to sell his field, and when he was walking on that public ground, he stumbled over the stones he had thrown there. He then said, "How well did that pious man say to me, "Why do you remove stones from ground which is not yours to ground which is yours?"[15]

In other words, the so-called "private sphere" dynamically changes hands; today, it is yours tomorrow; it belongs to someone else, while the "public sphere" will always remain ours. This idea appears in a similar form in the Midrash:

"Rabbi Shimon bar Yochai taught a parable: men were on a ship. One of them took a drill and began to drill under him. The others said to him: what are you doing? He replied, "What do you care? Is this not under my area where I am drilling? They said to him, "But the water will rise and flood all of us on this ship."[16]

In fact, you have to think of the world as a ship that we are all riding on, and if one of the passengers damages it and drills a hole under his seat, we will all drown!

It has taken a long time for modern industrial society to realize that damaging nature ultimately harms society itself.

Starting with health problems such as cancer and asthma caused by pollution and poisoning of natural resources, to the depletion of natural resources necessary for our existence.

The consumption habits of people in Western culture are the driving economic force for constant industrial growth that consumes more and more resources and emits more and more pollutants. Confrontation should, therefore, be through moral and educational means.

From the fact that man was created in the "image of God," there is a conceptual duty to preserve God's world. This conceptual duty is the basis for various legal obligations in Jewish law for man's behavior toward the environment.

The Almighty created a perfect world; the air and water were clear and without harmful additives, the vegetation was in its natural colors, and there were no mountains of waste on the Earth. Man was given dominion over nature, but only to a limited extent, and was commanded to preserve it. Unfortunately, man has not kept to this order, sometimes even out of contempt and pride. A disregard that today requires drastic measures to limit the damage.

Therefore, in order to limit man's position, Judaism imposes on him moral and legal obligations to preserve and protect the environment. We will deal with the specific legal obligations later, but we will end this part with a famous Midrash that speaks about the moral obligation and the great responsibility in Judaism that is the basis of environmental thought:

> "See the work of God, for who can mend what He has warped?" (Ecclesiastes 7:13) "See the work of God, for who can mend what He has warped?" When the Holy One blessed be He created Adam the first man, He took him and showed him all the trees in the Garden of Eden, and He said to him: "See My creations, how beautiful and exemplary they are. Everything I created, I created for you. Make certain that you do not ruin and destroy My world as if you destroy it; there will be no one to mend it after you."[17]

## Ecology in the Bible

In the Torah, there are quite a number of practical commandments with an ecological background and commandments that focus on the moral idea of preserving the environment. We will discuss some of the following.

### The Commandment of the Sabbath

> "Remember the sabbath day and keep it holy. Six days, you shall labor and do all your work, but the seventh day is a sabbath of your God: you shall not do any work—you, your son or daughter, your male or female slave, or your cattle, or the stranger who is within your settlements. For in six days God made heaven and Earth and sea—and all that is in them—and then rested on the seventh day; therefore, God blessed the sabbath day and hallowed it." (Exodus 20:7–10)

The Sabbath, as a day of rest, is undoubtedly one of Judaism's most important contributions to our civilization. The commentators[18] on the Torah explain that the Sabbath has a deep ecological change of consciousness. This rest, after 6 days of work and intensive use of nature, is meant to make us pause and reflect on what surrounds us, on the creation of the world and our relationship to it, because the Sabbath rest goes directly back to the creation of the world.[19]

### The Biblical Institution of the Sabbatical Year—Shemita

"And the Lord spoke unto Moses on Mount Sinai, saying: Speak unto the children of Israel and say unto them: When you come into the land which I give you, then shall the land keep a sabbath unto the Lord. Six years shall you sow your field, and 6 years shall you prune your vineyard and gather in the produce thereof. But in the 7th year shall be a sabbath of solemn rest for the land, a sabbath unto the Lord; you shall neither sow your field nor prune your vineyard. That which grows of itself of your harvest you shall not reap, and the grapes of your undressed vine you shall not gather; it shall be a year of solemn rest for the land." (Leviticus, 25:1–5).

The Torah prescribes the principle of the Sabbatical year every 7 years. During this year, agricultural activity rests. Maimonides suggests an ecological reason when all agricultural activities cease during the Sabbatical year is to improve and strengthen the land:

"As for the commandments enumerated in the laws concerning the Sabbatical and Jubilee years, some of them imply compassion for our fellow man and promote the welfare of mankind; for in reference to these commandments, the law says, "That the poor of thy people may eat" (Exodus 23:11); and furthermore, the land will increase its yield and improve if it lies fallow for a time."[20]

It is a year of renewal for the Earth, which is a clear ecological thought, but also of renewal for man. It is a year that contributes to the quality of the environment and the quality of life by stopping the material race.

The feeling that man has during the 6 years of work can make him think that he is the owner of the land, and therefore, he deserves this reminder in the Sabbatical year, a year in which his ownership of the land disappears, and he realizes that God is the true owner.[21]

### The Prohibition of Wasteful Destruction—Bal Tashchit

The source of the general, comprehensive prohibition against wasteful destruction goes back to the biblical prohibition against cutting down fruit-bearing trees in times of war.

> "When in your war against a city you have to besiege it a long time in order to capture it, you must not destroy its trees, wielding the axe against them. You may eat of them, but you must not cut them down. Are trees of the field human to withdraw before you into the besieged city." (Deuteronomy 20:19).

This commandment is extended and forbids the destruction of anything from which humans can profit, both man-made objects and the preservation of nature.

According to Judaism, this prohibition is the source of a complete ecological system of various values related to the conservation of natural resources, sustainability, sustainable planning, reforestation, energy conservation, proper disposal of waste products, recycling, and environmental protection.

Rabbi Aharon ha-Levi of Barcelona (1235–1290) writes about the importance of these mitzvahs (commandments) in his book:

> "It is known that this commandment is meant to teach us to love the good and the useful and cling to them, and in this way, goodness will cling to us, and we will avoid all that is bad and decadent. And this is the way of the pious: they love peace and rejoice in the good fortune of others, and bring everyone near to the Torah, and do not waste even a mustard seed, and they are pained by all destruction and waste that they see. And they save anything they can from destruction with all their might. But the wicked are different. They are the allies of those who destroy, they rejoice in the destruction of the world, and they destroy themselves: "with the kind of measure a man measures, so shall he be measured." (Mishnah Sotah 1:7).[22]

The ecological problem has another root: overconsumption. Overconsumption of natural resources results from problematic consumption and dietary habits. For example, energy consumption per person has increased disproportionately to the growth of the world's population. Or the meat industry, which is one of the world's biggest polluters. According to the Food and Agriculture Organization (FAO) of the United Nations, cattle farms are partly responsible for global greenhouse gas emissions that contribute to climate change.

"About 8% of fresh water is used directly or indirectly to raise animals, and it is estimated that there is a need for >15000 L of water to produce 1 kg of beef.[23] Despite this, the demand for meat in the world is growing, partly due to the continuous increase in the world population and the improvement in living conditions in developing countries like India and China. The FAO predicts that by 2050, meat consumption will increase by >70% compared to its level in 2010."[24]

From this general principle of the prohibition of wasteful destruction derives the ecological need to recycle waste, and there are numerous formulations of this in the sources of Jewish law. Here are two examples from the temple: the remaining blood from the outer altar, mixed with the water used to wash the area, was not thrown away but sold to gardeners for use as fertilizer.[25] The worn clothes of the priests were not thrown in the garbage but were made into wicks for lighting.[26]

These things affect the lifestyles of each and every one of us. A consumerist approach based on the values of this commandment, which forbids waste and destruction, if adopted in our Western culture, would bring about a valuable change in our daily behavior. It would protect natural resources and prevent the creation of mountains of waste.

### Commandments Prohibiting the Extinction of Plant and Animal Species

There are various mitzvot whose purpose is to preserve the foundations of creation, among which we can name the various species of animals and plants:

> "You shall observe my laws. You shall not let your cattle mate with a different kind; you shall not sow your field with two kinds of seed; you shall not put on cloth from a mixture of two kinds of material." (Leviticus 19:19).

> "If, along the road, you chance upon a bird's nest, in any tree or on the ground, with fledglings or eggs and the mother sitting over the fledglings or on the eggs, do not take the mother together with her young. Let the mother go and take only the young in order that you may fare well and have a long life." (Deuteronomy 22:6–7).

The various commentators see the purpose of these prohibitions as being to combat the danger of extinction of various species of animals.[27] According to Judaism, everything God created was created for a specific purpose, so it is forbidden to eliminate any animal species from the world.[28]

## Ecology in Rabbinic Literature

The Sages often spoke about the importance of environmental protection and even amended various regulations to implement this principle. We cite a number of precepts from Jewish law in the area of tort law and neighborly relations without going into detail since a comprehensive discussion of these precepts is far beyond the scope of this article.

Since industrial production is known to cause various types of pollution (noise, air, or water), Jewish law is concerned with the balance between the need for industrial and economic output and optimal living conditions in determining the permissible level of pollution and the proper distance between a particular industry and private homes.

The near and far effects of each industry in the modern world must be studied, as each industry has a different pollution effect in type and distance.

A person is generally required to keep various things that belong to him, including polluting industries, away from his residence to avoid harm and inconvenience to others. The different types of potential damages include the following:

"One must distance animal carcasses, and graves, and a tannery, a place where hides are processed, 50 cubits from the

city. One may establish a tannery only on the east side of the city because winds usually blow from the west, and the foul smells would, therefore, be blown away from the residential area. Rabbi Akiva says: One may establish a tannery on any side of a city except for the west, as the winds blowing from that direction will bring the odors into the city, and one must distance it 50 cubits from the city…"[29]

"When a person makes a threshing floor within his own property or establishes a latrine or a place to perform work that creates dust, dirt or the like, he must distance the place of his activity far enough that the dirt, the odor of the latrine, or the dust does not reach his colleague and cause him damage."[30]

"One must distance a mill from a neighbor's wall by a distance of three handbreadths from the lower stone of the mill, which is four handbreadths from the upper stone of the mill. What is the reason that one must distance a mill from the property of his neighbor? It is due to the vibrations it causes."[31]

There are other commandments and prohibitions in Jewish law relating to various types of pollution,[32] the planning and building of cities,[33] the observance of sanitary regulations,[34] and much more. Given the brevity of the treatise, we will limit ourselves to these.[35]

To conclude this section, I would like to note that there are Jewish thinkers who argue that Jewish law needs to be more active in the wake of the ecological crisis and extend prohibitions such as "idolatry" to the issue of toxins and pollution and that kosher dietary laws should include and emphasize the value of sustainability and environmental responsibility.[36] In addition, some scholars[37] have attempted to take a legal stand on contemporary environmental issues using key Talmudic themes in tort law, such as fire[38] and the pit.[39] Fire damage represents a category of damage caused by stationary forces that damage people or property while they are moving due to an external force (e.g., wind). This category should include a variety of modern environmental pollutants such as toxic chemicals, carcinogens, and other types of harmful wastes that are carried by the wind, seep into groundwater, or are otherwise dispersed in the atmosphere.[40,41] Pit damage includes damage caused by fixed hazards that harm those who encounter them in public spaces. A wide range of modern environmental pollutants, such as hazardous materials and industrial wastes, should be included in this category.[42]

In their research, they use various sources from classical Rabbinic literature and theological and philosophical layers of Jewish law to formulate a response to the environmental crisis. They have succeeded in making legal questions from the Talmud relevant to contemporary debates about environmental policy and ethics in order to legally and morally influence the industrialized economic system.

Out of a desire to stimulate discussion and action in the light of Jewish values, to bring about a change in our patterns of behavior regarding sustainability and attitudes toward the environment out of personal and communal responsibility.

## Conclusion

The sources of the Jewish religion, which are very rich and diverse, show broad support for sound environmental policies while emphasizing man's responsibility to the physical environment.

Rabbi Kook explains that the idea of morality is not just about helping others or giving charity.

Morality, as understood by Judaism, means using the pursuit of perfection to create a reality of a good and moral society, where morality and honesty fill the reality. A central component is concern and reflection on the harmony of life in the world, on the proper balance between ecological systems, on an attitude of compassion toward animals, on vegetarianism as a vision for the future of humanity's diet, on concern for habitats for endangered species, on reducing the use of polluting technologies that damage ecosystems—all of which derive from thinking about the entire universe as a whole that must balance its needs and resources in complete unity."[43]

Unfortunately, the root of the ecological problem lies in a selfish and materialistic worldview that urges excessive and unnecessary personal consumption.

Judaism, as in every other area of life, including environmental protection, places various commandments in the Torah and rabbinic literature at the service of the noble concepts of ecology. Commandments that sensitize man to our obligation to society and the environment; commandments that deal with education in self-control over materialistic impulses that lead to anti-ecological patterns of consumer culture. In this way, Judaism transforms an abstract moral vision into social principles for action.

In this article, we have discussed various principles and precepts in Judaism, moral and legal, abstract and practical, examining the various sources of Judaism. We hope that they will be used and contribute to the improvement of individual and public attitudes toward the environment.

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ORIGINAL RESEARCH

# Behind the New "Iron Curtain" Called "the West vs the Rest"

Sanja Vujačić

## Abstract

The West gave up on the common good through the "secession of elites" who gradually lost touch with the real concerns of ordinary citizens. The American meritocratic dream has vanished. In the most complex human organization (the system of international relations), disorder is growing. "No society" governance has not been able to produce development energy since the "end of history" stopped the ago–antagonistic debate about the best economic system and form of government. After pessimism and the abandonment of the class struggle, the left was gripped by fatalism, the belief that any attempt to improve the world is a waste of time or only leads to a worsening of the situation. The conviction that something completely different should be tried led to left-wing radicalism, contained in ecological nihilism and intersectional feminism. What are the chances that this new leftist ideology will be imposed on the world through the new geopolitical division "The West vs the rest"?

**Keywords:** Dehierarchization, Geopolitics, No society, Posthumanism, Recursion, Woman 2.0.

## Sadržaj

Zapad je odustao od općeg dobra„secesijom elita"koje su postupno izgubile kontakt sa stvarnim preokupacijama običnih građana. Rasplinuo se američki meritokratski san. U najsloženijoj ljudskoj organizaciji, sistemu međunarodnih odnosa, raste nered. „No society" upravljački sistem nije u stanju polučiti razvojnu energiju otkako je„kraj povijesti" prekinuo ago–antagonističku debatu oko najboljeg ekonomskog sustava i oblika vladavine. Nakon pesimizma i napuštanja klasne borbe, ljevicu je zahvatio fatalizam, vjera da je svaki pokušaj poboljšanja svijeta gubljenje vremena ili da samo vodi pogoršanju situacije. Uvjerenje da treba pokušati nešto sasvim drugo, odvelo je u lijevi radikalizam, sadržan u ekološkom nihilizmu i intersekcionalnom feminizmu. Kakve su šanse da se ta nova lijeva ideologija svijetu nametne kroz novu geopolitičku podjelu „The West vs the Rest"?

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As the philosopher Cynthia Fleury observes, the modern world is marked by forms of courage that are not mainly because there are situations, facts, and emotions that you need to be afraid of. Between the falsely brave, who are, in fact, "careless," and the truly brave, who know what to be afraid of, a person's courage determines his attitude toward threats: those he knows how to avoid and those he knows how to contain.[1]

The question arises: was the developed world brave or "careless" when, according to Christopher Lasch,[2] it announced the "secession of the elites" who, by abandoning the common good, led the world into the chaos of a relative society? By the "new elites," Lasch means the 20% of people with the highest incomes who can thank globalization for their rise. The "secession of the elites" enabled the complete mobility of capital and its owners, and they no longer actually live in the same world as their fellow citizens.

They declared themselves an enlightened minority and no longer even bothered to impose their values on the majority through rational public discussion. They see the majority as irredeemably racists, sexists, provincials, and xenophobics. They hold the reins of power in their hands and finance parallel or "alternative" civil society organizations tasked with educating the "ignorant masses" and avoiding direct confrontation with them. Avoiding the "revolt of the masses" through the fragmentation of the social fabric and the human being has resulted in dangerous isolationism, an ever-deepening material and intellectual gap between the elites and the masses. Political ideologies have lost touch with the preoccupations of ordinary citizens.

Only "classes that have the right to speak" participate in political discussions. Their exchanges are limited to

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empty political platitudes. Among them, intellectuals and media workers make fun of the "ignorant masses." They are portrayed as reactionaries who are, in a primitive and irrational way, hostile to reforms as well as to any changes. Flagrant examples come from France, the homeland of human rights: the adoption of Macron's pension reform against the will of the vast majority of the French (68%)[3] and the parliamentary opposition or ignoring the results of the 2005 referendum, in which 62% of the French rejected the draft of the European constitutional treaty (Treaty of Lisbon) that is valid today. When the masses vote for "populists," it is explained by their xenophobia. When they "vote badly" in referendums, it is only because they do not understand the questions. In both cases, they should not be blamed for being ignorant.

So, what is the vision of the world that separates the elite from the "ignorant" world?

## Trans Era

The developed world found itself in a "trans era." In an information society that abstracts class barriers and concentrates on outgrowing traditional racial, religious, gender, and psychophysical barriers. It is characterized by transdisciplinarity in science, which breaks down the boundaries between scientific disciplines and promotes their complementarity and joint achievements. The goal is to concentrate on the development of technologies that can improve the physical, mental, or reproductive abilities of humans. So, that is something we could call a trans woman–man of the 21st century, after it has fully mastered its life destiny, it should be ready for further upgrading with products of new technologies.

Bringing the once minor phenomenon of transidentity to the fore goes in that direction. There is a fight against discrimination against transgender people and for the affirmation of the right of every individual to decide what gender they are. A man should become capable of mastering his life's destiny in every aspect, even in terms of gender identity. In transgender people, unlike cisgender people, it differs from the gender assigned to them at birth. If, therefore, nonbinary people (trans women and trans men) do not identify themselves as strictly men or strictly women but as a mixture of the two, that is, as neither, then it is possible to break the traditional binary family union. Then, a transition from a humanist to a posthumanist society, as imagined by transhumanists, is possible.

By imitating examples from the media and on social networks, that is, "social contagion" and the militant pro-transient strategy of the rulers (lobbying and intimidation, social networks), it would be possible to erase gender boundaries. All in the name of free affirmation of gender identity. Allegedly free because of research such as that of the Wall Street Journal journalist Abigail Shrier, who met with psychologists, parents of transgender adolescents, and adolescents themselves (both those caught in the phase of gender transition and those who gave up the medically assisted transition to the desired gender) conclude that, in the name of supposed affirmation of gender identity, adolescent instability is exploited, resulting in surgical procedures and terrifying medical treatments.[4] Therefore, a legitimate question is raised about the possible irresponsible preparation of these adolescents for further surgical procedures and medical treatments promoted by transhumanism in the sense of human improvement using new technologies. The same is true in the conditions in which the scientific community warns that the predictions of the transhumanist movement, which gathers the bearers of the American technological vanguard, are often "phantasmatic and support an illusion." The warnings[5] do not diminish the importance of the impressive speed of development of trans-technologies (biotechnology, artificial intelligence, neuroscience), on whose wing's transhumanism has developed. However, in trans-predictions, it is necessary to distinguish possible scientific progress[6] from that which belongs to the "economy of promises." Because behind the transhumanist myth hides a huge network of local and global economic and political interests.

Transhumanists are a direct product of a society dominated by the power of money, banks, and industrial and political multinationals. The product has become the producer of a fanciful "economy of promises" whose goal is to stimulate investment in the development of new technologies. In return, they give investors phantasmatic promises, from healing to a more efficient brain to eternal youth and immortality,[7] which, lately, has upset even the great players such as Google, Facebook, Microsoft, IBM, and Amazon. They decided to define "good practices," especially ethical ones. Thus, the scientists of the French umbrella research organization French National Centre for Scientific Research call for an epistemological shift back and a call for awareness of their own cultural prejudices. After which, it is possible to pragmatically classify the effects of announcements, demiurge promises, and realistic scientific advances. However, the "economy of promises" is the habitus of the elite of the 21st century. Elon Musk embodies a new version of Nietzsche's "Superman" (after the fascist Übermenchen), and it is unrealistic to expect him and his supporters to abandon the habitus that was a winning formula for them.

## Complex Thinking

Epistemological shifts backward, and summoning conscience is insufficient if the more and more complex modern world is not analyzed with appropriate tools. In that sense, it is necessary to abandon linear causality, where always the same causes produce the same effects. Linear causality refers to a chain of events in which A causes B, B initiates C, C causes D, etc., which leads us to the wrong questions. For example, to the question: Will human or artificial intelligence overcome? The question is poorly placed because it abstracts

the complexity of the problem for what it was set. Therefore, it should be reformulated as—what is the relationship between human and artificial intelligence? The principle of organizational recursion of Edgar Morin[8] should be applied. It is a special form of circular causality (the chain of events in which A causes B, B triggers C, but C refers to A—the complex causality. Not only is there an unbroken chain between effects acting on causes and causes acting on effects, but the perpetuation of that chain is also present; for the reason that effects are also themselves producers of causes, the product becomes the producer of changes (preventive and corrective measures), that is, of its own reorganization.[9]

In the given context, the answer to the question is simple. According to the principle of recursion, just as the egg is both the product and the producer of the hen and the hen is both the product and the producer of the egg, artificial intelligence is both the product and the producer of human intelligence. Human intelligence taught artificial intelligence its own language, thus becoming the producer/teacher of that same language of human intelligence. Therefore, the fact that the product is the manufacturer enabled the inertness of human intelligence, that is, the transmission of its language from generation to generation of artificial intelligence. Even more. Thanks to the phenomenon of recursion, generations of artificial intelligence exist. Its reproduction is a manifestation of recursiveness.

In other words, the fear of the supremacy of artificial intelligence stems from a misunderstanding of intelligence, "which is multidimensional and nonlinear. Each type of cognition responds to specific needs related to the adaptation of the biological system to its environment and some physiological functions. The issue of support (biological body vs silicon chips) conditions and "gives meaning" to the deep nature of intelligence. Therefore, applications derived from machine learning will ultimately be used by human intelligence as tools in the service of people."[10]

Moreover, the imagined man-machine becomes an indivisible active unit,[11] a system. According to complex systems theory, the whole is greater than the sum of its parts because it benefits from the interaction between the parts. According to the hologramatic principle, the whole contains parts, and the parts contain the whole, just as different cells contain the genome of the entire organism, which itself is composed of cells. Thus, the new human appearance is presented in the form of the most complex system—human organization (between man and machine) that has the capacity of auto-eco organization and reorganization.[12] Auto-eco organization appears in the complex system under certain conditions, without changing the inherent properties of the constituent parts and the nature of their interaction; without the previous order of some leader of that organization, some external pilot or primary reaction. Therefore, it can be assumed that the finality of the human-machine system, like the finality of all other systems, will ultimately be the preservation of the balance between machine components. And that, through a permanent auto-eco reorganization punctuated by imbalances in the human-machine relationship. In other words, in the trans-era, artificial intelligence is not a problem but a solution for getting out of the deep social crisis into which the developed world was dragged by the acceptance of the idea that "the end of history and the man" has really come.

## No Society

The developed world no longer examines ideologies as a set of ideas about the best form of government and the best economic system. Especially since Francis Fukuyama, inspired by the theses of the "end of history"[2] of the French philosopher of Russian origin Alexandre Kojève, explained the end of the Cold War as an ideological victory of the concept of liberal democracy over other political ideologies.[13]

For Marxist Alexandre Kojève: "The end of history means the end of historical man, his actions in the full sense of the word (wars and revolutions). Man can now indulge in art, love, and games (activities that make him "happy")."[14] The thesis of neoconservative Francis Fukuyama is similar. However, the outcome of his "end of history" is opposed to Kojève's. For American political scientists, the epilogue is not a classless society but a planetary plebiscite of liberalism and market economy.

Therefore, since Margaret Thatcher declared in 1987 that society as such does not exist ("Tis No Society"), and the Berlin Wall fell in 1989, together with the possibility of a humanistic outcome of the "end of history," the neoliberal consensus has taken over the world. So, after communist entropy, according to natural laws, this inevitably led to democratic entropy.[3,15] It means the death of Western democracy if it closes and stops communicating with its environment, as the Union of Soviet Socialist Republics (USSR) once closed with the lowering of the "Iron Curtain." Today, such a "curtain" is represented by a new division in international relations, "The West vs the Rest." The disorder is constantly growing in the governance systems of developed societies.

The insurmountable gap between the social top and the bottom was constantly precarizing the Western middle class as well (the impossibility of social advancement through work), simultaneously collapsing the ideal of the American and European way of life that rested on them. "No society" is marked by the desertion of the bourgeoisie, the collapse of the welfare state, and identity paranoia. Priority issues have become the crisis of political representation, atomization, radical individualization of society, communitarian groupings, citadelization of the bourgeoisie as well as the problem of leaving the gentrified European political left by the left-oriented electorate.[16]

The capital owners provide the means for both right-wing and left-wing political options, so the class struggle of the left has slowly subsided, and together with it, class solidarity.

"Leftism" gradually decreased to activism that connects the growth of inequality with the identity characteristics of individuals (gender, religion, race, etc.). Activism has no political dimension. It serves to valorize the awareness of individuals (activists) regarding discrimination due to gender, race, religion, or other affiliation, as well as to valorize the digital networking of activists. Unlike the left-wing policies of the past century, the goal of activism is not to change the oppression and vulnerability it denounces but to valorize it. The growth of inequality, explained by belonging to one of the increasingly numerous discriminated groups (female, homo or transsexual, black, religious, etc.), fragments developed societies and their human beings.

With the fall of communism, the ago–antagonistic ideological clashes (Cold War) over the fundamental values of the management and economic system died down. That is why the "no society governance system" is no longer able to produce the development potential. It is "spinning in the void," endlessly dissecting and valorizing individual rights. In the classic left-right political spectrum, the progressives embodied by the American Democrats have taken center-left positions. They promote the principles of equality, the defense of individual freedoms, and economic interventionism (as a mechanism of harmonization and regulation in order to compensate for existing inequalities), that is, progressivism, which, step by step, profiled itself in the new political ideology of the left. In the progressivist paradigm, progress is manifested as progress toward economic and social equality, and, especially toward the legalization of many prohibited or strictly limited rights (e.g., legalization of abortion, euthanasia, or decriminalization of drug use).

Progressivism is opposed by conservatism as the framework political ideology of the democratic right embodied by the American Republicans. Conservatives promote economic freedom against economic interventionism, theism against atheism, free trade against protectionism, and the private sector against the public sector. The contemporary left-right political spectrum[17] has more characteristics that connect than separate, so voters recognize fewer and fewer solutions for their real problems in their political programs. The gap between the preoccupations of today's political left and right and the preoccupations of their voters best describes the gap between the "end of the world" (due to climate warming) and the "difficult ends of the month" (due to increasingly unbearable precarization). Progressives and conservatives are connected by common commitments, such as the defense of democracy, territory, and justice. Since they are not ready for systemic value changes, that is, those concerning the fundamental values of the ruling ultra-liberal financial capitalism, which, for example, treats labor as an expense and perceives only capital as productive, Western politicians are only ready to fight on the international stage for the defense of democracy, territory, and justice as they imagine them to be. They imagine them as universal values that justify the Western will to power as a civilizational mission to impose those values on the whole world for its benefit.

Consequently, in the context of "globalization defined as interdependence without solidarity" (Edgar Morin[18]), politics has been replaced by geopolitics. Thus, political ideologies have been replaced by raw competition for "influence and supremacy over territories, their natural resources, and population, in which geography is primarily used for warfare" (Yves Lacoste). Therefore, it is not clear how, in this context, it would be possible to move toward a new evolutionary phase. The posthumanist one, as announced by the philosophers of the 21st century.[4] It implies abandoning supremacy over the living and nonliving world. Paradoxically, precisely at the moment when the West engaged in a merciless struggle for supremacy on the international scene and the domestic political scene, the West traces the path toward posthumanism and transcending its supremacy over the living and nonliving world.

## Transcending of the Supremacy over the Living and Nonliving World

On the one hand, the transhumanists scrutinize this evolution through the development of an augmented man by means of new technologies. On the other hand, transhumanism is theorized by posthumanism as a philosophical direction created after the disappointing tragedies of the 20th century (holocaust, genocide, atomic bomb). It focuses on the criticism of modern anthropocentric humanism. It advocates a dehierarchization between living beings and their technical, social, cultural, and ecological environment.

Criticism of anthropocentric humanism mainly refers to the definition of man and his goals that come from the Enlightenment. So, to a definition produced by European, white, male, and privileged subjects which support the supremacy of man over his environment. As the Italian philosopher Rosi Braidotti[19] claims, this supremacy should be reexamined so that it does not destroy humanity by creating traumas and natural disasters and by depleting resources, which calls into question the sustainability of humanity and its habitat. Braidotti sees the solution in redefining the relational relations between human beings with nature and nonhuman species and in developing the concept of a human being capable of overcoming the anthropocentric vision of the world.

However, in redefining the relationship with the living and nonliving world, man started with the old "carrot and stick" policy. The posthumanist "carrot" took the form of an announcement of humanity's entry into the trans-era, conceived as a cycle of human transcendence by abandoning supremacy over the living and nonliving world (transhumanist idea of symbiosis between man and machine). At the same time, the geopolitical "stick" of the developed world continued to maintain its supremacy over all planetary

territories, their natural resources, and populations. Because the "carrot and stick," never more firmly than before, are held by the owners of capital, the left was first gripped by pessimism. Then fatalism, expressed in the belief that any attempt to improve the world is a waste of time, because all previous efforts in this direction only led to a worsening of the situation. Finally, fatalism produced left radicalism. It produced the belief that all institutions have already failed anyway, so it is useless to reform them. It is more useful to destroy them and try something completely different (nihilism). This is something Luc Ferry calls "the new environmental religion, perfectly symbolized by Greta Thunberg." Nietzsche explains nihilism as a belief in super-values placed above reality so that the latter could be negated and devalued. Today, values such as ecology, the modern family, or the emancipation of women should become new religions."[20]

## New Religions and "Woman 2.0"

In this sense, ecology denounces "the violence of the capitalist development model, which is based on the complete reification of other living beings, the unlimited exploitation of the Earth, and the destruction of other cultures."[21] The link with Christianity, as theologian François Euvé[22] claims, is "a rather modern interpretation of verse 1.28 Books Genesis, which carries the idea that life is ambivalent. Living things are fertile but also violent because animals devour each other. God, therefore, asks man to subdue and master that part of violence, that bestial part that is in us."[23]

At the center of the dehierarchization between living beings and their technical, social, cultural, and ecological environment is the "woman 2.0" (an association with the collaborative web "2.0" that democratized freedom of expression). She is environmental, anti-patriarchal, anti-racist, anti-homophobic, anti-transphobic, and anti-zoophobically aware. She is no longer just the mother of the family but a prequalified woman at the heart of social, economic, and political life. She is not just a networked woman but a woman-actor who confidently manages all aspects of her life and does not shy away from confronting men. As Laetitia Pouliquen states,[24] the woman paid for emancipation by losing her female identity. Due to the desire to be equal to a man in all respects, she grew into a "superwoman" through three interwoven political agendas.

The first political agenda concerns the "My Body Belongs to Me" campaign. It covers sexual liberation in the developed world, especially between the 60s and 70s of the last century, which covers the legalization of abortion, contraception, and pornography. Under the slogan "child when and if I want," followed by medically assisted fertilization, with *in vitro* fertilization, and preimplantation diagnosis, and surrogacy or gestation for others (GPA). Up to liberation from sexuality, fertility, and the "heritage" of humanity.

The second agenda, related to the Fourth World Conference on Women in Beijing in 1995, refers to gender ideologies that separate the body from the sex, denying gender differences that they perceive as social constructions. Gender should no longer determine a person who freely declares whether he wants to be male, female, or neutral.

The first two agendas deconstruct the traditional family. The third, as a component of the concept of transhumanism and posthumanism, is in the service of deconstruction of the human being. Its goal is to bring a person to an almost superhuman state, thanks to NBIC technologies (nano, bio, informative, cognitive). "Woman 2.0" should ultimately grow into a kind of cyborg, a woman-machine as powerful as a computer, who does not age, has no gender, and is soulless. She is no longer naturally fertile, she is no longer a mother, she is no longer a wife, and she no longer has a family or a social role specific to her female identity, which consists in giving herself away.

Thus, a woman in the trans-era is no longer a woman but a posthumanist Avatar,[5] which is as burdened with a pessimistic vision of the future of humanity faced with an ecological disaster as the one from the movie template. He only sees perspective in the benefits of techno-science.

Tired of unlimited freedom,[25] the posthuman Avatar is happy to leave his free will to biomechatronics, a science that combines biomechanics with robotics and medicine to enhance his organic body and spirit by incorporating mechanical elements.

## Intersectional Feminism

Since feminism is a key movement in overcoming the supremacy of man over the living and nonliving world, it has gradually evolved into an intersectional form to take on and integrate struggles against all forms of discrimination. In feminism, "intersectionality refers to a transdisciplinary theory that aims to understand the complexities of identity and social inequalities through an integrated approach. It rejects the closedness and hierarchy of the key axes of social differentiation,[26] namely the categories of sex/gender, class, race, ethnicity, age, disability and sexual orientation." In this way, he follows his evolutionary reproductive trajectory.

The reproduction of feminist language is impossible to stop, but it is possible to upgrade it. Thus, the Woman Attitude movement included in its feminist agenda the reconstruction of women's identity inspired by the vision of women from the past century (Edith Stein[6,27]). Anyway, in the 20th and 21st centuries, statistics on violence against women confirm that strong feminist campaigns and positive laws did not contribute to overcoming the physical superiority of men over women. Thus, in France, the High Council for the Equality of Women and Men[28] announced that 5 years after the #METOO feminist movement, it recorded a 33% increase in sexual violence; lawsuits were filed by <10% of the victims, and 80% of the cases were closed so that only 1% of them resulted in a criminal verdict.

In this context, the call for feminists to build a new female identity is understandable, as well as entering the phase of exhaustion and erosion of the female being of the second work of feminists, in which it seems to them that male

violence against women will disappear only when a woman is no longer a woman or improves her physical strength with NBIC technologies.

Unlike the humanistic one that precedes it, the posthumanist ideology is elitist and does not move the masses. The American meritocratic dream, which bewitched the planet, was once successfully embodied by President JF Kennedy. On the contrary, today, the new American dream of a man-machine, as powerful as a computer and which does not age, does not mobilize the masses. In addition, it is difficult to connect him with the current president of the USA, Joe Biden. What reinforces the enemies of the West is the idea that Western universal values and their posthumanist ideal are only Potemkin's villages.

## Eurasianism vs Western Universalism

The previous Western neoliberal globalization cycle of 1990–2020, combined with China's strategic potential and its giant domestic market, had a doping effect on China's economic growth, investments in infrastructure, education, research, new technologies, and the strengthening of the military apparatus. Politically and economically, this necessarily meant that the 21st century to be the century of East and Southeast Asia (Indo-Pacific). However, given the history of Western colonialism in Asia, China never adopted all the Western "no society values," and neither did Russia and Turkey. Presented as universal values, the affirmation of individual freedoms, democracy, and the rule of law, they encounter a firm ideological rejection by Chinese leaders, who perceive them as a "Trojan horse"[29] of Western interests. They are opposed by Asian values, "which are based on the rejection of individual freedoms and the belief that the rulers (the Communist Party of China) know better what is good for the people than they themselves. Personal freedom that gives rise to freedom of speech and protest, the rule of law and democracy are perceived as a door open to disorder of all kinds (anarchy and nihilism), which hinders the harmonious development of the people" (p34). Criticism of Western values, according to which these values pretend that they are created for all people in the space and time of the Earth but, in fact, tend to dissolve their identity, is in the service of justifying the collectivist and authoritarian Chinese regime.

Russian leaders support Asian values. They went one step further. They included them in the new Eurasianism, an ideology that developed under the baton of Dugin and Prokhanov, as well as Zyuganov, through the connection of Eurasianism with Sovietism. It is a geopolitical doctrine that supports the thoughts of Russian emigrants in the West from the beginning of the last century. It opposes racism and all other forms of destruction and mutual subjugation of peoples, cultures, and civilizations. It promotes a third geographic area between Europe and Asia—Eurasia, which would consist of Russia and most of the former Soviet republics (Kazakhstan, Turkmenistan, Tajikistan, Kyrgyzstan, Ukraine, Belarus, Georgia, Armenia, Azerbaijan, Belarus, and Moldova), covering the territory of the Russian Empire at the beginning of the 20th century. That Russian position is positively received in China, Turkey, Iran, and Afghanistan.

What we call today the conflict between Atlanticism and Eurasianism (the basis for the war in Ukraine) was best, prophetically, described by the most famous Russian dissident, Solzhenitsyn, in his speech held at Harvard on 8th June 1978. At that time, he condemned both economic systems, communism and capitalism. His criticism of the West, which gave him refuge, refers to "persistent blindness—a sense of illusory superiority—to the maintenance of the idea that all great countries on this planet should follow the development that will lead them to the current state of Western systems; theoretically the best, practically the most attractive; that all other worlds are only temporarily prevented by evil rulers or serious internal disturbances or because of their barbarism and misunderstanding, from taking the path of Western multiparty democracy and accepting the Western way of life. Each country is evaluated according to the degree of progress on this path. Although, in fact, this concept was born from the Western misunderstanding of the essence of other worlds, which are wrongly measured by Western standards. The true picture of the development of our planet has little to do with it."[30] Solzhenitsyn finally states: "I cannot recommend your society as an ideal model for the transformation of our (Russian) society."[31] This statement can be considered the basis for the current ideological conflict between Eurasianism and Atlanticism in Ukraine.

## Conclusion

The Western "posthumanist Avatar," in binary and nonbinary form, does not scare anyone, and the Western civilizing mission is rejected by "The Rest." The erosion of democracy in the Western camp is a reflection of the geopolitical division of The West vs the rest, which is why the disorder in the system of international relations is growing, and war hotspots are multiplying. Just as the Chinese Communist Party believes that it knows better what is good for the people than the people, democratic political elites increasingly believe that the people are ignorant, so they no longer bother to consult them when making important decisions. The new geopolitical division refers to the dispute over the best form of government, democratic or autocratic, and this same dispute is increasingly present in the internal political turmoil in Western democracies. While the intellectual elites contemplate abandoning the supremacy over the living and nonliving world, the economic and political elites have embarked on a struggle to preserve the supremacy of the West over the territories and their material and human resources. In the conditions of the dichotomy between the elites who fear the end of the world (climate warming) and the masses who fear the hard ends of the month, and between those who live on "sterile" labor that is treated as an expense and those who live on capital that is considered the only "fertile." Thus, a possible "revolt of the masses" was redirected

to the dichotomy of the West vs the rest. It could easily be transformed into The Rest vs the west, because it appeared in the critical transition period of 2020–2025. of the exit from the globalization cycle 1990–2020. During this past cycle, China has grown into a legitimate challenger to the United States and risks, in the new 30-year cycle 2020–2050, assuming the role of world hegemon. The danger of a global war is all the greater as the period of possible power transition coincides with the energy transition, which favors the proliferation of conflicts for access to energy resources.

The project known as the "Belt and Road Initiative" or "New Silk Roads" (formalized in 2015) aims to harmonize and accelerate China's trade exchange with the rest of the world. It is at the heart of China's undisguised ambition to become a leading world power at all levels by 2049 and thus mark the hundredth anniversary of the proclamation of the Communist Republic. The implementation of this gigantic project is proceeding according to plan, and to date, partnerships have been established with >100 countries. These new Silk Roads are land and sea, routed by the construction of numerous road, railway, and port infrastructures in Eurasia and by the accelerated construction of military infrastructure.

Looking at the map, it is impossible not to find that the Chinese, by tracing the Silk Roads (Fig. 1), reproduced the route of the Rimland on the periphery of the Heartland as conceived by Mackinder (Fig. 2). The goal is to form a single continent of Eurasia, under Chinese control. The United States defended itself from losing its influence on Rimland in favor of China with the North Atlantic Treaty Organization (NATO) shield—a series of military bases in partner states (Fig. 3).

China's alliance with Iran, a military-strategic alliance with Pakistan to encircle India, massive investments in Turkey's ailing economy, economic support to North Korea; territorial claims in the China Sea, unilateral partnerships with European states and former Soviet republics, etc.; these are all alliances and political rapprochements with the strategic centers of Rimland and in the sense of taking control over them from the USA. Therefore, the Rimland theory is a suitable tool for understanding China's power strategy, especially when it comes to projections of the next moves of the "Asian giant."

The Heartland is a key geostrategic zone that enables world domination through the land power it provides. Spykman adapted Mackinder's theory to the needs of the Cold War, identifying two zones of key strategic interest. That is, he added to the Heartland the "Rimland" peripheral territories around the Heartland, whose strategic importance derives from its hybrid position that mixes land and sea criteria and allows the land power of the Heartland to be contained. Consequently, whoever controls the


**Fig. 2:** Map of the world with Rimland and Heartland's theories; source: blog: Chronique du Grand Jeu; CC BY-SA 4.0; 2015 Jun 6 [cited 2023 Oct 16]; this file is licensed under the Creative Commons Attribution-Share Alike 4.0 International license; available from: https://commons.wikimedia.org/w/index.php?curid=81412495

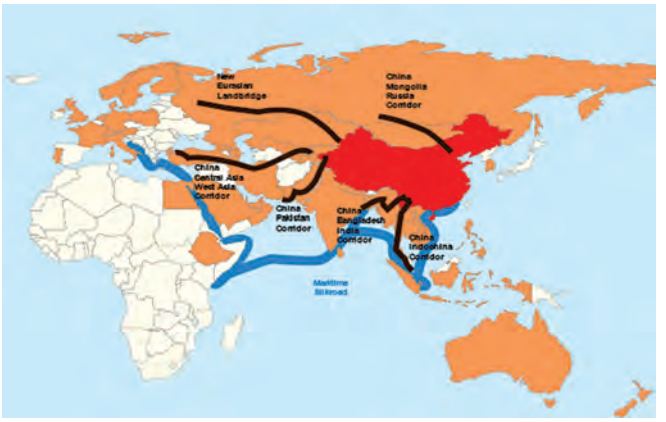


**Fig. 1:** Proposed Belt and Road Initiative. China is in red, and the members of the Asian Infrastructure Investment Bank are in orange; the proposed corridors are black (Land Silk Road) and blue (Maritime Silk Road); source: Lommes–Personal work. CC BY-SA 4.0; 2023 Oct 16 [cited 2023 Oct 16]; this file is licensed under the Creative Commons Attribution-Share Alike 4.0 International license; available from: https://commons.wikimedia.org/w/index.php?curid=58884083

**Fig. 3:** World map on which countries hosting at least one American military base are indicated in red (for Afghanistan, it is assumed that there are no more American military bases in the country after the withdrawal of all troops in 2021; Portugal does not host American military bases on its metropolitan territory, but its Lajes air base in the Azores is also used by the US Air Force, which is why the country is in red); source: Micheline CR-Vector Map. CC BY-SA 4.0; 2023 Apr 8 [cited 2023 Oct 16]; this file is licensed under the Creative Commons Attribution-Share Alike 4.0 International license; available from: https://commons.wikimedia.org/w/index.php?curid=130484307

Rimland can surround the Heartland and thus maintain control over it. The control of these two key strategic zones enables planetary supremacy (hegemony), as experimented with by the American policy of containment, with which the USA successfully restrained communism during the Cold War. In Rimland, two blocs weighed their forces: military for the wars in Korea and Vietnam, political in Iran, economic and strategic in the Israeli-Palestinian wars, and logistical in Afghanistan. The result of balancing these forces, before and after the Cold War, formed the line of demarcation of the blocs, along which the military bases of the US and its allies were deployed. This line coincides with the cartography of Rimland, that is, the environment of Heartland, in which the key territories of the former USSR, Turkey, Saudi Arabia, and Japan are located.

Heartland covers the Russian-Siberian area. Therefore, Spykman's theory, which is based on surrounding this area, explains the Russian fear of the expansion of the European Union and NATO to the Russian borders, as well as the war in Ukraine. The significance of Turkey and Saudi Arabia in Rimland explains the American tolerance of Turkish bellicism and Saudi "specificity." An intensification of the US naval presence in maritime disputes in Asia suits the needs of controlling the Rimland, as does the maintenance of a US military presence in the Middle East and support for Israel.

By withdrawing from Afghanistan, the United States weakened its positions in Rimland, so it was forced to strengthen those in Europe (the war in Ukraine) and withdraw the "Iron Curtain," behind which a disorder is growing that manifests itself in the erosion of democracy and possible economic collapse. The return to power of the Taliban in Afghanistan, as well as Russian intervention and presence in Syria, has also weakened the American position in the Middle East, thereby threatening the survival of Israel. "The rest" also got involved in the balance of power in Africa. In 2025, leaving the transition period in which a transition of power is possible, the new US–China power relationship in the Rimland should crystallize. By 2050 (the end of the current globalization cycle), a new inter-block demarcation line will be built.

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ORIGINAL RESEARCH

# Kako zdravo starjeti u ovom dinamičnom vremenu

## Healthy Aging in this Dynamic Time

Asim Kurjak[1], Milan Stanojević[2]


### Sažetak

Suvremeni razvoj povećao je postotak starih ljudi u svakom društvu. To je osobito slučaj u skupini onih koji imaju više od 65 godina. Svi, međutim, moramo shvatiti da starenje nije bolest, to je normalno fiziološko stanje na koje možemo utjecati u mnogim oblicima zdravog starenja. Ovaj rad opisuje i statistički ilustrira globalnu situaciju u različitim dobnim skupinama predlažući najbolje mjere koje treba poduzeti za zdravo starenje.


**Ključne riječi:** Starenje, Zdravlje, Svjetska zdravstvena organizacija, Epidemiologija.


### Abstract

Modern development has increased the percentage of older people in any society. This is particularly so in a group of those who are over 65. We all have, however, to understand that aging is not a disease; it is a normal physiological status on which we can influence in many forms of healthy aging. This paper describes and statistically illustrates the global situation in the different age groups, proposing the best measures to be taken for healthy aging.


**Keywords:** Aging, Health, World Health Organization, Epidemiology.

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## Uvod

Prema podacima Ujedinjenih naroda svjetsko stanovništvo stari. Gotovo da nema zemlje na svijetu koja ne bilježi rast udjela starijih osoba u stanovništvu i njihova broja.[1] Definicija starog društva je prema nekima kada postotak starijih od 65 godina u nekom društvu bude jednak ili veći od 7%.[1] Na svijetu je rast populacije stanovništva starijeg od 65 godina brži u usporedbi s drugim dobnim skupinama.[1] Prema podacima u dokumentu predviđanja svjetske populacije revizija od 2019., do 2050. godine se prognozira da će na svijetu biti 16% starijih od 65 godina (1 na 16), dok ih je 2019. godine bilo samo 9% (1 na 11)[1] ili prema procjenama 703 milijuna.[2] Prema nekim predviđanjima pretpostavlja se da će se do 2050. broj onih starijih od 65 godina udvostručiti i njihov apsolutni broj će biti oko 1,5 milijardi.[2] U Europi i Sjedinjenim Američkim Državama stanovništvo mnogo brže stari tako da će njihov udio u ukupnom stanovništvu iznositi 25% (1 na 4 osobe).[2] Zanimljivo je da je na svijetu prvi puta u povijesti 2018. godine, broj djece mlađe od pet godina bio manji od broja starijih od 65 godina.[2] O starenju stanovništva govori i predviđanje o utrostručenju broja osoba starijih od 80 godina što je u apsolutnim brojkama porast od 143 milijuna u 2019. na 426 milijuna u 2050. godini.[2]

Veličinu i dobnu strukturu stanovništva zajedno određuju tri demografska procesa[2]:

- fertilitet,
- mortalitet,
- migracije.

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Očekivani životni vijek se je povećao u svim regijama svijeta od 1950. godine do danas.[2] U većem dijelu svijeta, preživljavanje nakon 65. godine se u istom razdoblju znatno poboljšalo o čemu svjedoči i podatak da je u razdoblju od 2015.-2020. godine osoba u dobi od 65 godina mogla očekivati živjeti u prosjeku dodatnih 17 godina, što će se povećeti za 2 godine u razdoblju od 2045. do 2050. godine.[2] Kako se očekivani životni vijek pri rođenju produljuje, poboljšanje preživljavanju u starijoj dobi pridonosi sve

većem udjelu starijih u ukupnoj populaciji.[2] Najvažniji činitelji koji utječu na povećanje starenja stanovništva su pad plodnosti i sve veća dugovječnost na koje se nadovezuju i međunarodne migracije koje također pridonose promjeni dobne strukture stanovništva u nekim zemljama i regijama.[2] U zemljama koje se suočavaju s velikim imigracijskim tokovima, međunarodna migracija barem privremeno može usporiti proces starenja budući da su migranti uglavnom mladi i radno sposobni.[2] Međutim, migranti koji ostanu u zemlji s vremenom će ostarjeti.

## Starenje stanovništva: globalni problem?

Opća skupština UN sazvala je prvu Svjetsku skupštinu o starenju 1982., koja je proizvela „Bečki međunarodni akcijski plan o starenju" od 62 točke.[2] Godine 1991. Opća skupština UN usvojila je „Načela Ujedinjenih naroda za starije osobe," nabrajajući 18 prava za starije osobe koja se odnose na neovisnost, sudjelovanje, skrb, samoispunjenje i dostojanstvo.[2] Godine 1992. sastala se Međunarodna konferencija o starenju kako bi pratila Plan djelovanja, usvojivši Proklamaciju o starenju.[2] Godine 1999. slijedeći preporuku Konferencije, Opća skupština UN-a proglasila je 1999. godinu „Međunarodnom godinom starijih osoba."[2] Svake godine 1. listopada (oktobra) obilježava se "Međunarodni dan starijih osoba." U Madridu je 2002. godine održana Druga svjetska skupština o starenju te je nastavljena Akcija u ime starenja. S ciljem osmišljavanja međunarodne politike o starenju za 21. stoljeće, tada su usvojeni Politička deklaracija i Madridski međunarodni akcijski plan o starenju.[2]

Akcijski plan kako bi se ispunio ogroman potencijal starenja u dvadeset prvom stoljeću prepoznat je u Akcijskom planu koji poziva na promjene u stavovima, politikama i praksama na svim razinama.[2] Posebne preporuke Akcijskog plana za djelovanje daju prednost starijim osobama te razvoju i unaprjeđenju zdravlja i dobrobiti u starijoj dobi te osiguravanju poticajnog okruženja za starenje.[2]

## Neki statistički podaci o starenju u svijetu

Na Tablici 1 prikazani su statistički podaci o broju starijih u regijama Svjetske zdravstvene organizacije (SZO) u 2019. godini i predviđanjima za 2050. godinu iz kojih je vidljivo da će se broj starijih osoba povećati za 120% u svijetu s rasponom od 48% u Europi i Sjevernoj Americi do 226% Sjevernoj Africi i Zapadnoj Aziji.[2]

## Neki demografski podaci o starenju u Europskoj Uniji (EU)

Udio starijeg stanovništva u ukupnom broju stanovnika EU u 2020. bio je 21 %, dok je u 2001. godini bio 16%.[3] Udio stanovnika starih 80 i više godina iznosio je 2001. godine 3,4%, a 2020. godine 6%[3]. Istovremeno se postotak mladog stanovništva od 0 do 19 godina smanjio s 23% što je bilo 2001. godine na 20% 2020. godine.[3] Predviđa se da će se udio osoba starijih od 65 godina u EU-u povećati od 18.5% koliko je bio 2014. godine, na gotovo 30% koliko se predviđa da će biti 2080. godine.[3] Udio osoba starijih od 80 godina bio je 2014. godine 5%, što bi se u razdoblju do 2080. godine trebao više no udvostručiti na više od 12%.[3]

Udio osoba u dobi od 65 i više godina u ukupnom broju stanovnika bio je u nekim zemljama EU najviši u Italiji 23%, potom u Grčkoj, Finskoj, Portugalu, Njemačkoj i Bugarskoj po 22 %, dok su Irska s 14% i Luksemburg s 15% imale najmanje udjele.[3] U godinama od 2001.–2020. uočen je porast broja osoba starosti od 65 i više godina u svim državama članicama EU, a najveći porast od 7% zabilježen je u Finskoj a najmanji od 1% u Luksemburgu.[3] Prema podacima iz 2014. godine, države članice EU koje su imale najveći udjel stanovništva starijeg od 80 godina bile su: Italija s 6.4%, Grčka 6.0%, Španjolska 5.7% i Francuska 5.7%, dok su najmanji udio imale Irska i Slovačka, obje 3%, te Cipar 3.1%.[3]

U razdoblju 2001.–2020. u svim državama članicama porastao je udio osoba starih 80 godina i starijih, osim u

**Tablica 1:** Broj osoba starijih od 65 godina prema geografskim regijama 2019. godine i predviđanja u apsolutnim brojkama i postocima u 2050. godini[2]

| *Regija svijeta* | *Broj starijih od 65 godina 2019. (milijuni)* | *Predviđanja broja starijih od 65 godina u 2050. godini (milijuni)* | *Postotak povećanja od 2019. do 2050. godine* |
|---|---|---|---|
| Subsaharska Afrika | 31,9 | 101,4 | 218 |
| Sjeverna Afrika i Zapadna Azija | 29,4 | 95,8 | 226 |
| Središnja i Južna Azija | 119,0 | 328,1 | 176 |
| Istočna i Jugoistočna Azija | 260,6 | 572,5 | 120 |
| Latinska Amerika i Karibi | 56,4 | 144,6 | 156 |
| Australija i Novi Zeland | 4,8 | 8,8 | 84 |
| Oceanija isključujući Australiju i Novi Zeland | 0,5 | 1,5 | 190 |
| Europa i Sjeverna Amerika | 200,4 | 296,2 | 48 |
| Svijet | 702,9 | 1548,9 | 120 |

Švedskoj u kojoj se zadržao na 5%.[3] Taj udio se više nego udvostručio u nekim državama članicama. Tako je u Litvi i Hrvatskoj s 2% koliki je bio u 2001., u 2020. godini porastao na 6%, dok je porastao s 2 na 5% u Bugarskoj, Rumunjskoj i Sloveniji.[3]

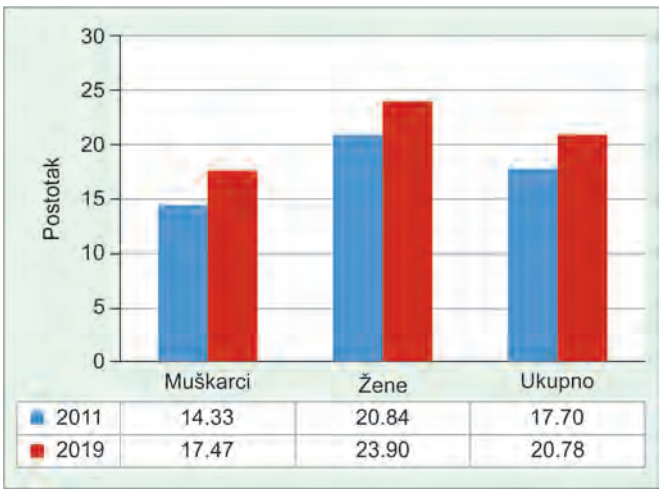
## Neki podaci o starijima u Republici Hrvatskoj i Republici Bosni i Hercegovini

Na osnovu popisa stanovništva iz provedenog 2011. godine u Republici Hrvatskoj živi 758.633 (17,7%) osoba starijih od 65 i više godina.[4] U Republici Hrvatskoj prosječna dob stanovnika iznosi 44 godine, pa je tako RH jedna od najstarijih nacija Europe.[4] Udio stanovnika starije životne dobi u stanovništvu prema popisu iz 2011. godine i predviđanja za 2019. godinu prikazani su na Slici 1.[4] Na slici je vidljivo da će se postotak stanovnika starijih od 65 godina značajno povećati, što se potvrdilo i nakon popisa stanovništva u Republici Hrvatskoj iz 2021. godine kada je ustanovljeno da stanovnika starijih od 65 godina ima 22.45%.[5]

U Hrvatskoj je 2014. godine postotak osoba starijih od 80 godina bio 4,5%, a predviđanja su da će se povećati na 13,2% do 2080. godine.[5]

U izvještaju Vijeća ministara BiH, prema popisu iz 2013. godine stanovništvo u BiH starije od 65 godina činilo je 14.2% ukupnog stanovništva, 2019. godine 16.5%, a za očekivati je da će taj udio do 2030. godine porasti na 25.8%. Projekcije govore da će 2050. godine stanovništvo starije od 65 godina činiti 37.9%, a do 2070. godine 43.5% stanovništva.[6]

I u Republici Hrvatskoj i u Republici Bosni i Hercegovini neizbježno se nameće pitanje novih modela zdravstvene zaštite kao i skrbi o starijim osobama, a ulaganje u zdravo starenje postaje neminovno zbog održivosti mirovinskog sustava.




**Slika 1:** Usporedba udjela osoba starijih od 65 godina po spolu u ukupnom stanovništvu, Hrvatska, popis 2011./procjena za 2019. godinu[4]

## Što starenje donosi društvima

Definiran je pokazatelj koji svjedoči o pretpostavljenoj ekonomskoj ovisnosti starih o radno sposobnima koja je povezana sa sve većim udjelom stanovništva u starijoj dobi, a prikazuje se kao omjer ovisnosti starije dobi (OOSD) (broj uzdržavanih starijih osoba u dobi 65 ili više godina na 100 radno sposobnih osoba u dobi od 20 do 64 godine).[7]

Globalno je 2019. bilo 16 ovisnih osoba starosti 65 ili više godina na 100 osoba u dobi od 20 do 64 godine.[7] Predviđa se da će se 2050. taj broj povećati na 28 starijih osoba na svakih 100 osoba u dobi od 20 do 64 godine.[7] U Europi i Sjevernoj Americi 2019. bilo je 30 ekonomski ovisnih starijih osoba na 100 radno sposobnih osoba.[7] Predviđa da će se taj omjer 2050. godine naglo porasti, dosežući 49.[7] Iz toga proizlazi da će se povećavati ovisnost starijih i opterećenje radno sposobnog stanovništva u ekonomskom smislu. U velikoj mjeri će za to biti odgovorno i sve veće povećanje osoba starijih od 80 godina u ukupnom broju starijih, tako da se može predvidjeti da će se udio osoba starijih od 80 godina od 2014. godine (kada je bio tek nešto više od 5%), porasti do 2080. godine na više od 12%.[1]

## Dekada zdravog starenja

Na 73. Skupštini SZO koja je održana 3. kolovoza 2020. godine, proglašena je „Dekada zdravog starenja 2020.–2030." To je bio poziv svim državama u svijetu da osvijeste značaj 10-godišnjeg razdoblja za poduzimanje zajedničkih akcija kako bi unaprijedili život starijih ljudi, kao i njihovih obitelji i zajednica u kojima žive.[8] Uzimajući u obzir prioritete u zdravom starenju, određene su konkretne akcije, a sve kako bi se ukazalo na njihovu važnost jer je potrebno sljedeće[8]:

- Izgraditi zajedničku platformu za inovacije koja bi povezala sve ljude svijeta.
- Planirati akcije koje će kreirati nove politike za duži život.
- Sakupljati globalne podatke kao i promicati istraživanja o potrebama starijih osoba.
- Prema potrebama starijih osoba organizirati dugotrajnu zdravstvenu i socijalnu skrb.
- U cilju provođenja integrirane skrbi za starije osobe - osigurati ljudske resurse za njeno provođenje.
- Treba pokrenuti globalnu kampanju protiv „dobizma" i o tome kako promijeniti razmišljanja i djelovanja o godinama i starenju.
- Svakako treba podržati ekonomska ulaganja i bolje razumijevanje zdravog starenja; razvijati globalnu mrežu prijateljskih gradova o zdravom starenju.

## O starenju prema mišljenju stručnjaka

Starenje je normalna fiziološka pojava. To je individualan proces i jedina sigurna budućnost svakog čovjeka. Ovisna je o genomu starenja ali i redovnoj primjeni pozitivnog zdravstvenog ponašanja tijekom starenje.[9] Kod starijih se osoba učestalije pojavljuju višestruke bolesti koje uzrokuju pad imuniteta, što ih tako čini najranjivijom skupinom

pučanstva.[9] U svom tekstu prim. dr. sc. Tomek-Roksandić kaže sljedeće: „Starenje je proces koji počinje od začeća i traje do smrti. Razlikujemo biološku starost koja (ne) odgovara kronološkoj dobi, i zato mi danas susrećemo šezdesetogodišnjaka koji je funkcionalno sposobniji nego deset i više godina mlađi čovjek. Pravo je pitanje koliko smo mi sami spremni učiti i prevenirati u tome da ne dođe do nastanka bolesnog starenja. Ne možemo spriječiti starenje ali možemo očuvati funkcionalnu sposobnost koja omogućava rad, a to je ono što zanima populaciju starijih ljudi. Stariji ne smiju postati žrtvom negativnog i neutemeljenog uvjerenja o sebi samima."[9]

Starost treba aktivno zdravo živjeti, a ne pasivno proživljavati.[4]

## Istine i zablude o starenju prema Školi narodnog zdravlja „Andrija Štampar"

Za bolje razumijevanje ove teme čini nam se važnim navesti tabelarno u Tablici 2 istine i zablude o starenju kako su navedene na stranicama Škole narodnog zdravlja „Andrija Štampar."[4]

## Hrvatski model zdravog starenja prema Školi narodnog zdravlja „Andrija Štampar"

Prema hrvatskom modelu zdravog starenja postoji petnaest uputa za zdravo starenje koje su prikazane u Tablici 3.[4] Model polazi od činjenice da je starost fiziološka pojava i sigurna budućnost svakog čovjeka ovisna o genomu starenja i primjeni pozitivnog zdravstvenog ponašanja tijekom starenja koji su prikazani sažeto u Tablici 3.[4] Pridržavanje tih uputa u nekim slučajevima rezultira time da je funkcionalna sposobnost pojedinog aktivnog 70-godišnjaka toliko očuvana da se ne razlikuje od funkcionalne sposobnosti 55-godišnjaka![4]

U proteklih deset godina, a sve u skladu s idejom o preventivnom zdravom starenju, Udruženje „Partnerstvo za javno zdravlje" je širom Bosne i Hercegovine uspostavilo niz centara za zdravo starenje.[10]

To su dobro osmišljeni dnevni centri gdje se okupljaju osobe starije životne dobi, tamo se druže i sudjeluju u aktivnostima i kursovima organiziranima za njih, kao što su na primjer preventivno-korektivna gimnastika, likovne sekcije, zatim kreativne sekcije za izradu tradicionalnih rukotvorina, učenje rada na računaru, učenje stranih jezika, zatim sportske aktivnosti, pa muzička sekcija i kulinarska sekcija.[10] Trenutno postoji 17 takvih centara u 9 općina u BiH, a do kraja 2020. godine se planira otvoriti još jedan. Populacijski fond Ujedinjenih nacija (UNFPA) je svesrdno podržao sve centre za zdravo starenje te u nekoliko proteklih godina promovira uspostavu mreže centara za zdravo starenje širom Istočne Europe i Centralne Azije.[10]

Kako bi se osiguralo zdravo starenje potrebna je odgovarajuća prehrana starijih osoba koja je sažeta u osam zlatnih pravila prehrane starijih osoba[10]:

- Prehrana starijih osoba svakako treba biti usklađena s općim preporukama o zdravoj prehrani, energetskim potrebama starijih osoba, kao i njihovom tjelesnom aktivnošću.

**Tablica 2:** Istine i zablude o starenju prema Školi narodnog zdravlja „Andrija Štampar"[4]

| *Istina* | *Zabluda* |
|---|---|
| Starost podrazumijeva bolest | Starost nije bolest, pojava bolesti u starijih zahtjeva liječničku intervenciju |
| U starosti se ne mogu naučiti nove vještine | Starije osobe mogu naučiti nove vještine, postići i bolje rezultate od pojedinih osoba u mlađoj dobi, zbog toga je nužno cjeloživotno učenje |
| U starijoj dobi se više miruje | Nema dobne granice za trajnu fizičku, psihičku i radno-okupacijsku aktivnost u ranijoj (65–74 godine), srednjoj (75–84 godine) i dubokoj starosti (od 85 i više godina) |
| Dugovječnost je isključivo nasljedna | Nasljeđe je važan čimbenik dugovječnosti, ali osnove za zdravo aktivno starenje i očuvanje funkcionalne sposobnosti u dubokoj starosti počinju u mlađoj životnoj dobi pozitivnim i suodgovornim zdravstvenim ponašanjem |
| Kronološka dob istovjetna je biološkom starenju | Ne postoji istovjetnost kronološke i biološke starosti, već je starost uvjetovana nasljednom i tjelesnom osobnošću svakog pojedinog čovjeka uz prevenciju rizičnih čimbenika nastanka bolesnog starenja |
| Starije osobe su ovisne o tuđoj pomoći i gerijatrijskoj zdravstvenoj njezi | Samo svaka peta osoba starija od 65 godina ovisna je o tuđoj pomoći. Veliki udio starijih ljudi samostalno obavlja sve svakodnevne aktivnosti, dok je bolesnim starijim osobama nužna gerijatrijska zdravstvena njega |
| Starenje nije normalna pojava i može se spriječiti | Starenje je prirodna, fiziološka pojava nepovratni individualni proces, koji u pojedinih ljudi napreduje različitom brzinom |
| Starija osoba je isključivo sama odgovorna za svoje zdravlje i funkcionalnu sposobnost | Starija osoba je suodgovorna za svoje zdravlje i funkcionalnu sposobnost uz suodgovornost svih interdisciplinarnih stručnjaka koji skrbe u zaštiti zdravlja starijih osoba |

**Tablica 3:** Upute za zdravo starenje prema hrvatskom modelu Škole narodnog zdravlja „Andrija Štampar"[4]

| *Redni broj upute* | |
|---|---|
| 1 | Stalna tjelesna aktivnost od mladosti do duboke starosti uključuje vježbe disanja i vježbe mišića dna zdjelice zbog sprečavanja nekontroliranog mokrenja |
| 2 | Stalna psihička aktivnost, cjeloživotno učenje i stjecanje novih vještina i znanja |
| 3 | Smjernice pravilne prehrane za starije od 65 godina - kalorijski dnevni unos hrane u pravilu ne veći od 1500 kcal zbog smanjenja bazalnog metabolizma u starijih te dnevni unos do 2 litre nezaslađene tekućine, koja uključuje juhu i varivo |
| 4 | Pravilna prehrana za starije od 65 godina znači smanjeni unos „5B" u hrani (bijelo brašno, bijeli šećer, bijela riža, sol, mast); uključuje konzumiranje sezonskog povrća i voća, plave ribe, bijelog mesa bez kožice; hranu je u pravilu potrebno pripremati lešo i bez zaprške, izbjegavati pohanu i prženu hranu s preporukom do 1 dcl crnog vina uz glavni obrok |
| 5 | Spriječiti debljinu u ranijoj starosti (65 do 74 godina) i osobito pothranjenost u dubokoj starosti (85 i više godina) zbog očuvanja funkcionalne sposobnosti |
| 6 | Nepušenje i neovisnost o lijekovima, alkoholu, opijatima, crnoj kavi i drugim sredstvima ovisnosti |
| 7 | Produljenje radnog vijeka ovisno o funkcionalnoj sposobnosti i specifičnosti zanimanja, stalna radna aktivnost i nakon umirovljenja |
| 8 | Prijenos znanja, vještina, radnog i životnog iskustva na mlađe i druge starije |
| 9 | Seksualna aktivnost ne poznaje dobnu granicu |
| 10 | Aktivno razvijanje komunikacije i socijalne uključenosti, vježbanje prilagodbe na stresne događaje |
| 11 | Svakodnevna osobna i okolišna higijena, higijena i sanacija zubi i zubala, redovito obrezivanje noktiju na rukama i nogama. Uklanjanje barijera, kliznih i mokrih površina u kući i okolišu radi sprječavanja padova i ozljeda te osvjetljavanje okolišnog prostora |
| 12 | Neprihvaćanje predrasuda i neznanja o starenju i starosti kao bolesti, nemoći i ovisnosti o drugima (samo svaka peta starija osoba ovisna je o tuđoj skrbi zbog funkcionalne onesposobljenosti) |
| 13 | Pridržavanje uputa liječenja i uzimanja lijekova pod nadzorom liječnika |
| 14 | Primjena preporučenih mjera zbog visokih temperatura zraka ili nastalih hladnoća (www. stampar.hr/gerontologija) |
| 15 | Primijeniti aktivno zdravo produktivno starenje tijekom cijeloga života |

**Tablica 4:** Izreke o starenju istaknutih intelektualaca i neke narodne izreke o starenju[11–13]

| *Izreka* | *Autor i izvor* |
|---|---|
| Ništa žalosnije od starca koji osim starosti nema drugoga dokaza da je živio. | Lucius Annaeus Seneka |
| Razuzdan mladić griješi, a razuzdan starac luduje. | |
| Dok si mlad, nemaš iskustva, kad si star, nemaš snage. | Aleksandar Solženjicin |
| Čovjek se probija dok je mlad, a poslije pazi da se mladi ne probiju. | Pajo Kanižaj |
| Čovjek koji je prestar da bi učio vjerojatno je uvijek bio prestar da bi učio. | Carl Haskins |
| Mladost imamo zato da činimo gluposti, a starost da za tim glupostima žalimo. | Ernest Hemingway |
| Čuvaj zdravlje za starost, ljetinu za zimu. | Bosanske misli |
| Mlad delija–star prosjak. | Bosanske misli |
| Nemojte ostarjeti, koliko god živjeli. Uvijek se ponašajte kao znatiželjno dijete pred velikom misterijom zvanom–život. | Albert Einstein |
| Oni koji duboko vole nikad ne ostare; ako i umru od starosti, umru mladi. | Arthur Wing Pinero |
| Čak i ako umremo sa 100, još uvijek umiremo mladi. | Alexander Payne |
| Želim ti da umreš mlad, ali da se to desi što kasnije. | Nepoznati autor |

- Svakodnevno je potrebno jesti što raznovrsniju hranu uz obvezan doručak. Za doručak treba jesti voće i bezmasne mliječne proizvode. Za ručak jesti što više povrća i ribe uz najviše jedan decilitar crnoga vina. Za večeru treba unositi što manje namirnica, večerati najkasnije 3 sata prije spavanja i po mogućnosti uvijek u isto vrijeme.
- Preporuča se dnevno uzimati osam čaša od 2 dl vode ili negazirane i nezaslađene tekućine (umanjuje se unosom tekuće hrane).
- U povećanoj količini preporučuje se unositi sezonsko voće, povrće, klice i integralne žitarice.
- Crveno meso svakako zamijeniti bijelim mesom peradi bez kožice i osobito plavom ribom.
- Primjeren unos nemasnoga mlijeka, nemasnoga sira, jogurta, kefira, tofua, orašastih plodova.
- Posebno se preporuča ograničiti unos soli, šećera, bijelog brašna, masnoća te bijele riže u hrani (zamjensku masnoću nadoknaditi uljem buče, masline ili suncokreta).
- U cilju sprječavanja bolesnoga starenja preporuka je povećati unos brokule, cvjetače, prokulice, cikle, crvenog i bijelog luka, sojinih proizvoda, te bučinih koštica.

## Izreke o starenju

Starenje je tema koja je zaokupljala brojne istaknute intelektualce svijeta, ali i obične ljude, te nam se čini da bi ih bilo vrijedno navesti u Tablici 4.[11–13]

## Zaključak

SZO definira „zdravo starenje" kao: „proces održavanja zdravlja i funkcionalne sposobnosti, koji omogućava blagostanje u starijoj dobi i u sredini koja podržava njihovo samostalno socijalno uključivanje, dostojanstveno, bez predrasuda i diskriminacije. Osnove za zdravo starenje postavljaju se u mlađoj životnoj dobi pozitivnim zdravstvenim ponašanjem. Najčešće zdravstvene poteškoće koje se javljaju u starijoj dobi vezane su uz kronične nezarazne bolesti (visoki krvni tlak, dijabetes, ozljede i dr.), uz prateće promjene koje zahvaćaju i druge organe (vid ili sluh)."[4] SZO je posebno istakao važnost odnosa prema starenju i osobama starije dobi budući se izraz "dobizam" (engleski Ageism) razvio nažalost s negativnim značenjem i konotacijama.[4]

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ORIGINAL RESEARCH

# Ethics and Ecology

Ivan Koprek[1], Mikolaj Martinjak[2]

## Abstract

Ethics as a "practical philosophy" should judge not only human actions toward their "neighbors" but also toward the wholeness of all living beings and the entirety of the world (cosmos)—nature—whose regeneration abilities are limited. As an important interlocutor in the scientific and social debate on ecology, philosophy (especially ethics) should clarify and reconcile the tensions between natural determinism and human freedom that shape collective (economic and political) life. In that sense, this article advocates moderate biocentrism, which emphasizes that all living and nonliving organisms (including nature) are, in an analogous sense, objective goals or goals in themselves. As means–ends in themselves, they are never the exclusive means for man's subjective goals. Therefore, the idea of moral order in the realm of goals is not and must not be limited only to man but should also include nature—if not as a subject, then certainly as an object of the moral order.

**Keywords:** Determinism, Ecology, Ethics, Human activity, Human freedom, Moderate biocentrism, Nature, Philosophy.

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If we look for an interpretation of the term ethics in any dictionary, we will always find an expert explanation of the Greek words "ethos" and "eethos." It is usually said that those words have a multitude of meanings, even those that exclude each other in the content. Thus "ethos" (that is, "eethos") means nature, abode, place of residence, homeland, but also a place of grazing for animals, a place of presence, domestication, essence, and vigilance. It is indicated that ethics relates to our (human) deepest values and the busyness of life, with something to do with our personality.

Many questions are related to the topic of ethics. First and foremost is the one about human kindness. At the same time, man does not find goodness in the expansion of the knowledge he acquires but rather in the questions he asks himself. What does it mean to ask? Firstly, to enter a dialogue with the unknown. In a question, a person abandons his point of view and his attachment and goes somewhere else. If the question is the beginning of a genesis of philosophy, then the question about man is also the central question of ethics.

Man is a being who wants to experience what is good, who wants to know the truth, and who wants to rejoice in the beautiful. He feels bound to the laws of the world and matter, but at the same time, in his freedom and spirit, he transcends himself and the world in which he resides. Man cannot be encompassed, limited, or expressed by anything. In his existence, he crosses the boundaries of mere individuality into the dimension of his pro-existence in which the human being should, as Hegel said, be viewed as an "individuum" but also as a "community." Living simply means "being-with," being "to-gether."

The root of our feeling that we are human beings among other people with whom (in our waking life—as Heraclitus said) we share a common world is recognizable in our call (an obligation) to take care of ourselves, of others, and of what we call the environment, nature. In this concern for the future of man and the world, it seems that ethics has a justification for its existence.

Certainly, the world (nature, environment) is our home, our abode, and our birthplace. We shape it in our freedom. Playful with scientific and technical successes, intoxicated by his imagination and knowledge (power) but also passions, at the beginning of the 21st century, man came to a vague realization about his own freedom. Today, it is increasingly obvious that the natural and technical sciences are increasingly and violently suppressing the social-humanistic core. Man shows his power. It is necessary to recognize the calamity and devastation of man's freedom, dignity, spirituality, and sociability—in simple terms, his psyche and personality. Nature is also being destroyed. That is why we need ethics.

The modern man, more than the ones from the past, stands before the graves of the words that are rusted and become empty wrecks. Such is the case with the meaning

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of the word "ethics." It has become nothing more than a "paleonym" or "old name," a term that is "strategically rusted."

Despite this, today, perhaps more than ever, the awareness of the need for ethics is alive. In the framework of technical, and especially biomedical sciences, responsibility is often called for, in fact, a "return" of ethics is called upon.

Some recognize the reasons for this return in the collapse of today's politics, which often ends up in lies and injustices. The other reason is the increasing psychological distraction of man who is faced with a lack of meaning and sense. The return of ethics or morality, thirdly, coincides with the religious secularization and dechristianization that began in the Renaissance, continued in the Enlightenment, and still prevails to this day. Thus, according to some, the need and necessity for ethics is regarded as a kind of substation for religion.

However, "ethics" these days is not only a desirable and sought-after substitute for religion but often also a masking word with which one wants to neutralize and soften the stench of human wickedness, or else, it is seen as a welcome addition for a possible improvement of life and benefit. Thus, in the temporal invocation of ethics and morality, modern man does not think of permanent, constant—rational—models and principles of doing; he does not think about his well-being, personal excellence, kindness, care for his home and place of residence. In essence, he is not looking for an answer to the question: how to live, how to act—how to be a good individual?

The questions posed certainly do not require an answer only according to some legal regulations, nor according to benefits, but according to human ethos, according to the marks and values that make up the human essence, in fact, a person's psychological maturity: to be a good person. The meaning of ethics is to encourage the goodness (excellence) of human life—the realization of a good personality and healthy sociability. In this sense, ethics is not only necessary for occasions, and sometimes, it is not a welcome decoration or "perfume" but the basis of human life, an essential determinant, and a guide of human existence in responsibility (care) for oneself, for others and for the world (nature, the environment) in which he lives.

## Ethics and Nature

The fact is that the world (nature), which the modern science with the help of technology, turned into a lifeless, silent, researchable, and usable thing, should be in fact experienced and perceived as a life-giving community. While in the past we considered our environment (nature, the world) as an object of exploitation (and it seemed to neutralize all the consequences of our actions with a seemingly infinite capacity for regeneration), today we are becoming aware that this regenerative capacity has its own strict limits.

Irresponsible use of technology leads to irreversible consequences and actions.[1,2]

Yet, what is "nature"? In a broader sense of the term nature, it means the whole world around us in all its infinite variety of manifestations. In that sense, we can say that nature (physis or natura) is an objective reality that exists outside and independently of human consciousness. In the narrower sense of the term, nature refers to the entire material world, except for society, as the totality of the natural conditions of human existence.[3]

In the understanding of ancient philosophers, nature was everything that is—being. The first interpretations of nature were shaped by thinkers who appeared in the Ionian city of Miletus on the coast of Asia Minor of the Mediterranean Sea. The most famous representatives of that school were Thales, Anaximander, and Anaximenes. Thales believed that the beginning of the world was water. Anaximander considered a certain substance "apeiron" to be the fundamental principle of the world. According to Anaximenes, the primary principle is air: when released, it becomes fire; when it thickens, it turns into wind, then into a cloud, it becomes water, then earth, stones, and other substances.

Classical Greek philosophers declared and treated nature differently. In contrast to Socrates, who neglected the study of the extrahuman world (nature), and Plato, who evaluated that same world as a nonindependent reflection of the ideal world, it was Aristotle who was the first to confirm the independent reality of everything in the natural world. No one before or after him understood nature as ontological substance. Namely, Aristotle believed that nature is a living organism, guided by a purpose in itself, which creates its own forms of events and at the same time produces a series of other forms, that is, nature itself creates the objects that are included in it. The source of this is not an external force, but the inner soul—entelechy, God's mind, inherent in the very being, and its—as Aristotle said—nature (physis). Thus, the term "nature" (physis) in Aristotle had primarily an ontological and anthropological meaning. This meaning, or better to say understanding, was predominantly present in the philosophical thought of the ancient world and Middle Ages.[4]

In the new era, the original meaning of the term "nature" began to refer to the nonhuman, that is, material, plant, and animal world. Thus, in the Renaissance—the peak of culture and arts—views on the relationship between nature and man became different. Here, man became the center of everything. Nature as a wholesome entity ceased to exist for him. It became fragmented, and technology took charge.

The predominance of technology caused the transition from organic life to organized actions. Man realized his own power over nature, experimenting and inflicting more and more "wounds" on it, destroying forests, and polluting rivers, lakes, seas, and oceans. The true beginning of the experimental natural science approach to nature should be sought in the philosophical statements of F Bacon, R Descartes, and G Galileo.[5]

For example, Bacon's scientific goal became the expansion of man's dominion over nature. Nature must be mastered, tamed, exploited, used, stripped of its hidden

secrets and riches, and used for man's subjective purposes, and not only the nature that immediately surrounds man but the entire cosmos (stars, firmament, etc.). In this vision, nature loses its ontic identity and dynamic originality. She has become man's "slave" and "possession" with which one can do whatever one pleases.[6]

Until the industrial age, the moral considerations of our actions were within manageable limits. All ethical judgments took place at the level of man toward his fellow man. The radius of moral action was therefore narrow, and man only had to consider and answer for the direct or obvious spatial and temporal consequences of his act.[7]

It is true that man acts beyond his knowledge and power through the pressure that technical inventions exert on him. However, in the rules of our actions, we should also include the uncertainty inherent in every foreshadowing and interpretation of the future. Due to the unpredictability of future conditions, we can only act safely if we always assume that the worst forecast will come true. The possible unpredictability and independence of technical inventions teach us to take caution and predictions of doom about them seriously.

Secondly, nature and man coexist; we are a part of the ecosystem around us and never above them—respect for nature and its vital functions should be the same as respect for other people.[8–10]

## Ecology and Ethics

Today, ethics is increasingly becoming an important interlocutor in scientific and social discussions about nature and the environment. Two directions are predominant in these discussions. On one side are those who are against the "moralization of the ecology,"[11] and on the other side are those who claim that eco-ethics is of crucial importance in a scientific and technical civilization.

Different approaches are found in contemporary literature. Their spectrum is broader if the distinction between a shallow and a deep ecology is applied.[12] The goal of "shallow ecology" would be general health and well-being. The highest ecological norm of "deep ecology" would be the preservation of the vital needs of all living things.[13]

There is also a discussion about "classical and modern eco-ethics." Usually, biocentrism, pathocentrism, and holism, as well as mixed forms from these positions, are included under the classic positions of eco-ethics. Modern eco-ethics, on the other hand, want to reach the political, economic, and legal horizon in the discussion about the collapse and saving of the ecosystem.

### Biocentrism

Within the framework of an increasingly destructive model of the economy and technology, the first ecological-ethical thoughts date back only to the last century. Thus, at the beginning of the century, the German physician and missionary Albert Schweitzer explained his ethics by referring to "reverence for life."[14]

Respect for life is absolute and without exception because life is the most holy. It is sacred.[15] Thus, with the formula on respect for life, Schweitzer formulated the first and the broadest position of philosophical biocentrism. Life of everyone and everything alive has an imperative for man. Such ethics dictates behavior that approaches all living things with awe and avoids everything that would hinder or destroy life itself.

However, if a man relies on the principle of respect for life, other problems arise and are impossible to hide. Here, as Schweitzer himself observed, the consequences that appear cannot be denied if we do not relativize this principle by pointing to the scale and hierarchy of life's values. For Schweitzer, a clear consequence of respecting the values is the prohibition of consuming animals as food. However, what about the cases where human life can only be preserved when another life must be destroyed instead? Schweitzer himself pointed out the example with bacteria from his medical practice. Human life can only be saved if the bacteria are destroyed. The idea that man gives (sacrifices) his life to save the life of bacteria becomes a completely absurd ethical principle that conflicts with the principle of awe that man should apply to himself.

### Pathocentrism

Pathocentric orientation of eco-ethics is closely related to biocentrism. If biocentrism is what "being alive" is and gives the direction of ethical action, then pathocentrism refers only to one specific partial aspect of life, on suffering (pain).[16] Therefore, man's action should consider not only another man but also the whole nature if it can feel (suffer). This thought was repeated and represented in different forms in the interpretation of Bentham's thesis, for example, as ethics of compassion in Schopenhauer or as a utilitarian calculation of interests in the philosophy of P Singer. Singer's critique of "speciesism"[17] does not want the scope of ethics to end only with man. The limits of morality are not determined by the mind but by the suffering.

If nature is in this way focused on the principle of pathos, then this happens at a great cost: strict adherence to the fundamental principle of equality cannot exclude the attitude that man is against nature without acknowledging the assumptions of value. In an extreme case, this can mean that human well-being should not be given more protection than what is given to nature.

### Holism

If ethical orientations toward suffering and toward life are viewed as arbitrary and ultimately unfounded theses, then this leads to a further expansion of the area of ethical thinking, namely to a complete and comprehensive area of ethics—to holism. Different holistic ethics agree that they do not recognize exclusive boundaries of ethical meaning. Analogous to the political-theoretical discussion, which understands certain forms of exclusivity as discrimination and therefore marks them as politically incorrect, so for the

holistic position, any exclusion from the sphere of ethical space should be marked as ethically incorrect. Not only those who can suffer, not only living nature but also nature within its limits possesses ethical relevance. Holism tries, as was formulated by Arne Naess, to think "deeper" and not to value nature only in its isolation, but to co-think also of a man in nature.[18] Such "deep ecology" revises the modern division of the world and brings the holistic hope that, in a theoretical context, man and nature can be brought to unity.

Starting from a very broad understanding of the concept of nature, which extends from the individual being to global ecosystems, Naess advocates for the protection of nature as an assurance of its self-development. The same thought that man is a part of nature is observed in the philosophy of Klaus Michael Meyer-Abich. Man, as a specially trained part of nature in this regard, should bring that nature to its "expression."[19]

Biocentrism, pathocentrism, and holism are not only represented in their pure forms, as we have described them, but are also recognized in their mixtures. For example, such a mixed form is represented by R Spaemann. He starts from biocentrism and refines it theologically. Respecting the living as a value leads to the ethics of "awe," which can only be found in "religious attitude toward nature."[20]

A similar mixed form is represented by the ethics of one of the creators of bioethics, H Jonas, author of the well-known work Principle of Responsibility. Jonas extends biocentrism teleologically. This teleology, from the assumed self-realization of the living within the ethics of nature, shapes moral duties. Nature has goals. And therefore, they can be justified.[21] Yet, only the man is responsible for everything.

All models of eco-ethics presented so far have in common the idea of a critical rejection of emphatically anthropocentric ethics. "Reckless anthropocentrism,"[22] which is how Jonas pointedly expresses the extended belief, has characterized all previous ethics until now.

Anthropocentrics reject the objection that with their thinking, they have prepared the way for the downfall of the world. On the contrary. For example, John Passmore, in nonanthropological eco-ethics, recognizes old and always new attempts to suppress rationalism in favor of irrationalism and mysticism. Thus, speaking about the "sanctity of nature" strengthens nature less than it weakens man as a critically autonomous subject. Passmore, therefore, in order to overcome the ecological crisis, advocates abandoning everything that limits man's position. He rejects every attempt at a new ethics. He considers classic anthropocentric ethics sufficient, which, for him, is not necessarily destructive. In that ethics, it is possible to find a sufficient program for establishing a correct attitude toward nature. According to Passmore, both should be preserved: the nature that makes human existence possible in the first place and the freedom that arises from it.

The fronts in the ecological-ethical debate, on one side, biocentrism, pathocentrism, and holism, and on the other, anthropocentrism, as we have noted, can be reduced to two great traditions of thought. One can be called classic, and the other modern. Therefore, the classic types of ethics are those which, in their founding process, refer to the subject as an external and immutably conceived instance. Accordingly, biocentrism, pathocentrism, and holism derive their own valid theories directly from nature.

For classical ethics, which wants to avoid the harms of scientific and technical civilization in a normative way, it is true that many causes of such harms are directed from the ethically oriented individual to the ethically oriented collective. Such a foundational program cannot be achieved modernly according to the norm of the constructed power of the subject, but only premodernly with the help of a material, moral theory, which in the specific case is carried by "nature," whereby this term, as a rule, keeps it in an unreflect void.

Modern ethics, on the contrary, is based on the subject—immanent. According to Heiner Hastedt, modern means: "what one's own criteria creates from itself, (...) premodern are all forms of foundation, which attribute the direct founding function to tradition, divine instance, government, cosmos, or nature."[23] Subject—immanent-based ethics is more (as in modern discourse ethics) or less (as in Kant) dynamic and liberal. Unlike classic eco-ethics, modern ethics move away from the practice and remain theoretical.

Man's primordial need to get rid of material scarcity, increase material wealth, and secure and affirm his life has always been the noticeable expression of a constant desire to subjugate nature and master his own life. However, even in these circumstances, man is faced with an absolute requirement to bring meaning to his universe and his life. This is his moral responsibility, which, among other things, must decide whether the man of the technical epoch will do everything he can.

The expansion of science and technology, and the increase in man's power correlated with it, not only caused profound changes in nature but also became an appeal (perhaps initially only within philosophy) for a change in man's consciousness, his fundamental attitudes toward the world, the future, and his own responsibilities. The world, as E Husserl rightly demonstrated, is essential in relation to the ability of synthesizing consciousness and must not be objectivistically distorted. The core of these fundamental positions is the consciousness of moral responsibility. Man needs to justify his behavior in sense of integration into a wider meaningful horizon. That is the key for the discussions of anthropocentrism or biocentrism of eco-ethics today.

J Passmore's radical anthropocentrism, as was shown, advocates the thesis that man is not only the only subject of morality but also its only object. An example of this is Kant's dichotomy between persons and things, according to which only and exclusively mental beings, persons, are means and ends in themselves; all other beings are just things and means (Kant, A IV 428). In that sense, radical anthropocentrics maintain that the protection of animals and plants can only be sustained or justified only anthropologically.[24] There is,

of course, no duty that in itself should protect plants and animals.[25]

Proponents of radical anthropocentrism in philosophical eco-ethics are opposed to biocentrism in which they recognize the endangerment and destruction of the Western tradition, in which the person and scientific-technical rationality have priority. For them, biologism is primitivism, mysticism, fatalism, the enemy of science, and ultimately just an uncritical metaphysics.[26–28]

We think that we should distance ourselves from such radical anthropocentrism and once again soberly examine the biocentric position. What do biocentrics object to in anthropocentrism? The central objection of biocentrics against anthropocentrics is "speciesism," which should also be discarded like racism and sexism, and which states that human interests take precedence over extra-human nature.[29]

Biocentrics in their radical version claim, as does S Hampshire for example, that the natural order as a whole is the object of unconditional interests and unconditional respect, which we label as moral. In their opinion, it makes no difference whether a tree or a man dies, and they argue that in both cases, a living being dies and returns to the earth. Therefore, Meyer-Abich wonders how it is that the "dying" of a tree has no ethical connotations. At the same time, he believes that nature thinks and feels in us.[30] Man's freedom is nothing more but the freedom of nature.

An even clearer notion of radical biocentrism can be found in Taylor.[31] There is no doubt that one should stay away from such a radical biocentrism. Personally, we adhere to the thesis of moderate biocentrism, which focuses on the ambiguous meaning of the word "life."

The life of a plant differs from the life of a human. How is it, then, that Taylor, Hampshire, and Meyer–Abich claim unconditional moral respect for both cases? They can because they represent Spinoza's metaphysics and thus deny the analogy of the term "life." Different forms of life, according to this metaphysics, are the expression (natura naturata) of the life force (natura naturans), which as a whole is found in everyone. We do not want to criticize this position of Spinoza. It is true that ethics can lead to metaphysics. However, in order to ensure as much consistency as possible, she should remain stingy in the use of metaphysical terminology.[32]

Therefore, we should ask whether direct duties, given their insensible nature, can be formed with less use of metaphysics? Here, it is important not to lose sight of the analogy of the term "life." For this purpose, we need to refer to the classical thought of Aristotle.

For Aristotle, "life" is the being of the lived (Aristotle, II 4, 415 b 13). In our time, H Jonas took over the Aristotelian ontology of organisms and highlighted its significance for eco-ethics. Jonas interprets life with the help of the descriptive concept of freedom. He notes that at the level of vegetative life, freedom is manifested in the phenomenon of substance exchange. The need of an organism is a form of intentionality.

We can summarize the moderate biocentric thesis in eco-ethics as follows: everyone, even those non-sentient organisms, to use Kant's terminology, are in an analogous sense objective goals, or goals in themselves. Therefore, they are the subjects of the goals. In their activity, they have themselves as their goal, and, in that sense, they are there for themselves. As means in themselves, nature and other living organisms are never exclusive means for the subjective goals of man. Therefore, Kant's moral order idea of the realm of ends must not be limited to man only but must also include nature and subhuman organisms, if not as subjects, then as objects of moral order. The biocentric thesis relies on the analogous notion of self-aim or goal.

It is certain that anthropocentrism and biocentrism in many substantive issues lead to the same conclusions and demands. A change in posture is important for the biocentric position. Ethics does not stop at establishing norms. She also mediates ethos, an emotional posture that motivates to act correctly. That is why a purely aesthetic attitude toward nature is not enough. The danger is that attitude toward nature is reduced to a matter of subjective taste. The biocentric thesis requires an attitude that starts from the esthetic[33] toward the ontological value of nature, which it acknowledges and values. A model of cooperation and coexistence should take the place of thinking, which, in nature, is only a means to satisfy human interests. Man should treat nature in such a way that he lives up to its goals.

The ecological crisis forces us to look at the human community. We need to realize that we are largely dependent on nature and other organisms and thus recognize their contribution to us if we respect their interests and needs. This does not threaten the man's privileged position; on the contrary, it is highlighted.

The biocentrism we are advocating is not naturalism because the distinction between the subject and the object of morality remains prominent. By respecting the goals of nature and seeing a partner in it, in the long run, it can mean that he bears responsibility for himself. Man is "a part of nature." He does not exist "apart from nature." As a spiritual, physical being, he is a part of nature and, as such, is determined by the laws of material life. In this sense, a moderate biocentric attitude belongs to both moderate holism and anthropocentrism.

There is no doubt that only man is a moral being, a being endowed with freedom. This was prompted by GJ Warnock, distinguishing between "moral agent" and "moral patient."[34] Namely, man, as the bearer of personal responsibility, is the subject of morality and the addressee of moral duty, that is, he is the only "moral agent." Other living creatures of the earth are touched and shaped by man's morally good or evil deeds and omissions. To that extent, they are also "moral patient(s)," and, cautiously speaking, "object of morality."

The prominent analogical way of speaking about the moral status or demand of subhuman living beings directs attention to the moral duties of a man in dealing with them,

which means—man's responsibility in nature, and not only in front of nature. Man has goals and needs of a nonhuman nature that must be weighed and thus make moral decisions. He must use nature by taking it as a goal that should be appropriate to its own goals.

## Instead of a Conclusion: More than Just Eco-ethics

Modern eco-ethics remains incomplete until its normative skeleton is supplemented with purpose. In doing so, we follow the previously expressed thought that ethics should remain stingy in metaphysical statements and deductions. Meaning in ethics is lived and understood in what, after antiquity, can be designated by the term a good life. A good life does not seek and strive for quick happiness and easy success but for what an anticipated view of the whole can make successful.

In that sense, eco-ethics must remain a permanent theory that will succeed in establishing a concept of action that will be able to fit into the global model of good living. The ethical form of life that could do this (realize) does not need to be invented by the ethicist; it is already described in Aristotle's Nicomachean Ethics.

Man acts ethically if he designs life in the face of battle, in awe and benevolent love, in thinking of life. In this sense, his responsibility also depends on retrieving purpose.

It should be said that, in a certain way, purpose precedes man. He finds it while in it; he is called to pursue it himself, to preserve it in the world. Religion certainly helps in these endowers.

We can find confirmation of what has been said in all religions (firstly in Abrahamic). They awaken our ecological consciousness in a special way. It is about humbly acknowledging the sanctity of life. Without a sense of the sacred and awareness of the importance of religious contribution to environmental protection, the doors of our common home—nature—are opened wide to barbarism of all kinds.

Nature and the world, which modernity has turned into a lifeless, "silent," exploratory, and usable something, can be reexperienced through religion as living, as something alive. Pope Francis warned about this in his encyclical letter "Laudato si."[35–37]

In the commentary on the mentioned encyclical of Pope Francis, B Latour explains how we have wrongly assigned the earth to science and that, at the same time, we pointed to heaven when we talked about religion. We should do the opposite. When we talk about science, we should raise our eyes to heaven, and when we talk about religion, we should be down on earth. As it is obviously objective knowledge that has access to the far, far away—it reaches everything, without limitation, as long as it is provided with the means to do so. Religion, on the other hand, is the one that has a certain chance of allowing access to the neighbor, the one who is near.[38–39]

In that sense, eco-ethics would actually remain a kind of spirituality, "cosmic mysticism"—pan-en-theism (P. Th. de Chardin). In this context, it is good to remember the three key points on which ecological spirituality rests: awareness and eye for the sanctity or sacramentality of nature, awareness of kinship and harmony with nature, and compassion and responsibility for all creation. This was perhaps sung in the most beautiful way possible long ago by St Francis in his Song of Creatures, which speaks of the fact that every creature glorifies the Creator in a unique way, and thus, in the respect of every creature, one can recognize a sign of universal reconciliation, the establishment of the state that the Creator wanted "in the beginning."

This, however, as Pope Francis says, "does not mean equalizing all living beings and taking away from the human being that special value that at the same time includes a terrible responsibility. Nor does it include the divinization of the earth, which would deprive us of the call to cooperate with it and to protect its fragility."

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ORIGINAL RESEARCH

# Internacionalna akademija nauka i umjetnosti u Bosni i Hercegovini: neki brojčani i scientometrijski pokazatelji članova

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## Sažetak

U obrazloženju osnivanja Internacionalne akademije nauka i umjetnosti u Bosni i Hercegovini (IANUBIH) navedeno je kako Akademija ima zadatak da potiče razvoj nauke i umjetnosti, čuva, njeguje i promovira znanstvenu i kulturnu tradiciju, a izražava spremnost za promjene koje su primjerene vremenu i potrebama sredine iz koje potiče, i u skladu s kriterijima i vrijednostima prihvaćenim u svjetskoj nauci i umjetnosti, a težnja dostizanja naučne istine i umjetničke izvrsnosti je jedini kriterij i ideal njenog djelovanja. Za takve ciljeve potrebno je snažno i kvalificirano članstvo koje je sposobno na svojim plećima iznijeti ovakve zahtjevne zadatke. Neupitna je kvaliteta Akademije i njezinog sastava. Po brojčanim, scientometrijskim pokazateljima to je najjača Akademija u regiji. Čak njih 46 bili su ili jesu dekani, prodekani, rektori, šefovi katedara. Rektorske je funkcije obnašalo njih 15, a 15 članova bili su ambasadori, konzuli i općenito diplomati, 11 članova obnašalo je funkcije ministara, 34 je članova ujedno i u sastavu raznih svjetskih i regionalnih akademija. Navedeni pokazatelji upućuju na vrlo kvalitetnu strukturu članova Akademije i to ne samo u pogledu obnašanja važnih državnih, regionalnih ili svjetskih akademskih funkcija već i izravno sudioništvo u znanstvenom radu što se očituje brojem citata i h-indeksom. Pritom treba naglasiti da je značajan broj članova znanstveno aktivan, a također dobar dio predstavljaju članovi u eksponencijalnoj životnoj fazi. Upravo ta kvaliteta je razlogom osnivanja Akademije sa ciljem promicanja nauke i obrazovanja u Bosnii Hercegovini i u regiji.

**Ključne riječi:** Akademija (IANUBIH), članovi, scientometrija, funkcije, ciljevi.

## Abstract

Founding documents of the International Academy of Sciences and Arts in Bosnia and Herzegovina (IANUBIH), state that the Academy's task is to encourage the development of science and art, preserve, nurture and promote scientific and cultural traditions, and expresses readiness for changes that are appropriate to the times and needs of the environment from which it originates, and in which it exists. The Academy mission and implementing activities are accordingly in line with the criteria, and specifically in line with the values accepted in world science and art. The Academy acts in constant pursuit of scientific truth and artistic excellence as the baseline criterion and ideal of its activity. Such goals require a strong and qualified membership that is capable of carrying such demanding tasks. The quality of the Academy and its members is unquestionable. According to numerical and scientometric indicators, it is the strongest Academy in the region. As many as 46 of the Academy members are actual or former deans, vice deans, rectors, heads of departments. 15 of the members held the functions of rector, and 15 members were ambassadors, consuls and diplomats in general, 11 members held the functions of ministers, 34 members were or are also members of various world and regional academies. These significant indicators point to a relevant high-quality structure of members of the Academy, not only in terms of gathering holders of important national, regional or world academic functions, but also gathering active scientists that actively and directly participate in the global scientific achievements, which is reflected in the summarized number of citations and the h-index. At the same time, it should be emphasized that a significant number of members are scientifically active within their exponential life phase. These qualities were the precise underlying reason for establishing the Academy with the aim of promoting science and education in Bosnia and Herzegovina and in the wider region.

**Keywords:** Academy (IANUBIH), Members, Scientometrics, Functions, Goals.

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## Citiramo iz službenog opisa IANUBIH

„Internacionalna akademija nauka i umjetnosti u Bosni i Hercegovini ima zadatak da potiče razvoj nauke i umjetnosti, čuva, njeguje i promovira naučnu i kulturnu tradiciju, a izražava spremnost za promjene koje su primjerene vremenu i potrebama sredine iz koje potiče, i u kojoj egzistira. (...) Akademija radi u skladu s kriterijima i vrijednostima prihvaćenim u svjetskoj nauci i umjetnosti, a težnja dostizanja naučne istine i umjetničke izvrsnosti je jedini kriterij i ideal njenog djelovanja."

Neupitna je kvaliteta Akademije i njezinog sastava. Po brojčanim, scientometrijskim pokazateljima to je najjača

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**Tablica 1:** Broj i struktura članova

| | |
|---|---|
| Redovni članovi | 60 |
| Suradni članovi | 74 |
| Inozemni članovi | 21 |
| Ukupno | 155 |

**Conflict of interest:** Dr Krešimir Pavelić is associated as Editor-in-Chief of this journal and this manuscript was subjected to this journal's standard review procedures, with this peer review handled independently of the Editor-in-Chief and his research group.

**Tablica 2:** Broj članova po razredima

| *Broj članova po razredima* | *Redovnih* | *Suradnih* | *Ukupno* |
|---|---|---|---|
| Razred za društvene nauke | 9 | 7 | 16 |
| Razred za medicinske nauke | 24 | 19 | 43 |
| Razred za humanističke nauke i kulturu | 14 | 11 | 25 |
| Razred tehničkih i prirodno-matematičkih nauka | 3 | 8 | 11 |
| Razred za religije | 4 | 4 | 8 |
| Razred za mlade naučnike | 1 | 10 | 11 |
| Razred za dijasporu | 1 | 8 | 9 |
| Razred za održivi razvoj | 4 | 7 | 11 |
| Razred za inozemne članove | 21 | | 21 |
| Ukupno | 81 | 74 | 155 |

**Tablica 3:** Broj članova IANUBIH koji su aktualni ili bivši dekani, prodekani, voditelji katedri, rektori, prorektori, ambasadori, konzuli i ministri, te članovi međunarodnih akademija

| | |
|---|---|
| Dekani/prodekani/voditelji katedri—bivši i aktualni | 46 |
| Rektori/prorektori—bivši i aktualni | 15 |
| Ambasadori/konzuli/diplomacija—bivši i aktualni | 15 |
| Ministri—bivši i aktualni | 11 |
| Članovi međunarodnih akademija | 33 |

**Tablica 4:** Redovni članovi IANUBIH–scientometrija - po broju citata (više od 1.000 citata) Podaci s Google Scholara ili Scopusa, 25.9.2023

| *Ime i prezime* | *Broj radova* | *Broj citata* | *h-indeks* | *Izvor Scopus ili Google Scholar* |
|---|---|---|---|---|
| 1. Asim Kurjak | 1.217 | 16.330 | 70 | Google Scholar |
| 2. Krešimir Pavelić | 459 | 12.207 | 56 | Google Scholar |
| 3. Miralem Pašić | 525 | 9.370 | 54 | Google Scholar |
| 4. Miro Jakovljević | 463 | 9.257 | 51 | Google Scholar |
| 5. Vida Demarin | 1.036 | 7.661 | 44 | Google Scholar |
| 6. Sandra Kraljević Pavelić | 275 | 4.518 | 33 | Google Scholar |
| 7. Srećko Gajović | 157 | 3.313 | 28 | Google Scholar |
| 8. Emir Fazlibegović | 38 | 2.801 | 16 | Google Scholar |
| 9. Osman Sinanović | 231 | 2.789 | 23 | Google Scholar |
| 10. Almir Badnjević | 194 | 2.576 | 29 | Google Scholar |
| 11. Milan Stanojević | 176 | 2.430 | 26 | Scopus |
| 12. Dragan Jovašević | 539 | 2.328 | 24 | Google Scholar |
| 13. Velimir Srića | 75 | 2.215 | 21 | Google Scholar |
| 14. Dražen Vikić Topić | 146 | 2.031 | 21 | Google Scholar |
| 15. Dejan Jović | 180 | 1.999 | 21 | Google Scholar |
| 16. Halima Resić | 167 | 1.801 | 19 | Google Scholar |
| 17. Vanja Bašić Kes | 195 | 1.791 | 22 | Google Scholar |
| 18. Nikica Gabrić | 168 | 1.671 | 21 | Google Scholar |
| 19. Dragan Babić | 205 | 1.644 | 18 | Google Scholar |
| 20. Aida Salihagić Kadić | 64 | 1.624 | 30 | Scopus |
| 21. Krešimir Rotim | 265 | 1.396 | 19 | Google Scholar |
| 22. Aleksandar Ljubić | 149 | 1.385 | 19 | Google Scholar |
| 23. Mirza Žižak | 40 | 1.236 | 11 | Google Scholar |
| 24. Igor Rudan | 818 | 208.870 | 161 | Google Scholar |
| 25. Joseph Schlessinger | 793 | 158.275 | 194 | Google Scholar |
| 26. Norman Sartorius | 1.418 | 75.853 | 113 | Google Scholar |
| Ukupno | | 537.371 | | |

Akademija u regiji. Evo i nekih brojčanih podataka o članstvu IANUBIH. Ukupno je 155 članova od čega 60 redovnih, 74 suradna člana i 21 inozemni član (Tablica 1). Broj i struktura članova IANUBIH prikazani su u Tablici 1 i Tablici 2.

Najbrojniji je Razred za medicinske znanosti (ukupno 43 člana), slijedi Razred za humanističke nauke i kulturu (25 članova) te Razred za inozemne članove (21 član) (Tablica 2).

Impresivan je podatak o funkcijama članova IANUBIH. Čak njih 46 bili su ili jesu dekani, prodekani, rektori, šefovi katedara. Rektorske je funkcije obnašalo njih 15, a 15 članova bili su ambasadori, konzuli i općenito diplomati, 11 članova obnašalo je funkcije ministara, 33 je članova ujedno i u sastavu raznih svjetskih i regionalnih akademija. Broj članova s njihovim funkcijamaprikazan je u Tablici 3 dok je njihov popis prikazan u Tablici 5.

Tablica 4 prikazuje najcitiranije članove IANUBIH sa ukupnim brojem objavljenih radova, brojem citata i h-indeksom. Pokazatelji navedeni u Tablicama 1 to 6 upućuju na vrlo kvalitetnu strukturu članova Akademije i to ne samo u pogledu obnašanja važnih državnih, regionalnih ili svjetskih akademskih funkcija već i izravno sudioništvo u znanstvenom radu što se očituje brojem citata i h-indeksom. Pritom treba naglasiti da je značajan broj članova znanstveno aktivan, a također dobar dio predstavljaju članovi u eksponencijalnoj životnoj fazi. Upravo ta kvaliteta je razlogom osnivanja Akademije sa ciljem promicanja nauke i obrazovanja u Bosni i Hercegovini i u regiji.

Završit ćemo ovaj prikaz tekstom na web stranici Akademije. „Naša zemlja živi u vrlo nestabilnim političkim prilikama, a društvena stvarnost često je više utemeljena na partikularnim političkim interesima nego što je bazirana na zakonskoj regulativi koja je sukladna savremenim evropskim standardima. Kao takva, ona je postala i sve više postaje pravi eldorado za dominaciju partikularnih političkih interesa nad vladavinom prava u svim sferama života, pa tako i u nauci. Internacionalna akademija nauka i umjetnosti je autohtona multietnička akademija koja ima jasne kriterije prijema temeljene na scientometriji."

Na kraju napominjemo da smo podatke navedene u tablicama sastavili isključivo na temelju podataka koje smo dobili od članova Akademije ili na temelju njihova životopisa. Nekoliko članova nije odgovorilo na upit pa njihovih podataka nema u tekstu. Priroda ovakvog prikaza je takva da će se ionako tekst i podaci morati s vremenom obnavljati.

**Tablica 5:** Popis članova IANUBIH koji su aktualni ili bivši dekani, prodekani, voditelji katedri, rektori, prorektori, ambasadori, konzuli i ministri, te važne međunarodne funkcije. Podaci na dan 18.9.2023

| *Dekani/prodekani/voditelji katedri—bivši i aktualni* | |
|---|---|
| 1. Borislav Petrović | Dekan Pravnog fakulteta Sveučilišta u Sarajevu |
| 2. Miro Jakovljević | Prodekan za znanost na Medicinskom fakultetu Sveučilišta u Mostaru |
| 3. Mustafa Sefić | Dekan Medicinskog fakulteta Univerziteta u Banja Luci |
| 4. Velimir Srića | Prodekan za međunarodne odnose na Ekonomskom fakultetu Sveučilišta u Zagrebu |
| 5. Salih Kulenović | Prodekan za nastavu i šef Odsjeka historija-geografija na Filozofskom fakultetu Univerziteta u Tuzli te šef Odsjeka za geografiju Prirodno-matematičkog fakulteta Univerziteta u Tuzli |
| 6. Pavo Barišić | Dekan Fakulteta hrvatskih studija Sveučilišta u Zagrebu |
| 7. Fuad Ćatović | Prodekan za nastavu na Mašinskom fakultetu na Univerzitetu Džemal Bijedić" u Mostaru<br>Dekan Mašinskog fakulteta na Univerzitetu „Džemal Bijedić" u Mostaru<br>Dekan Građevinskog fakulteta na Univerzitetu „Džemal Bijedić" u Mostaru<br>Dekan Fakulteta informacijskih tehnologija na Univerzitetu „Džemal Bijedić" u Mostaru |
| 8. Faik Uzunović | Prodekan i v. d. dekana Metalurškog fakulteta u Zenici |
| 9. Elvir Zlomušica | Prodekan za nastavu i prodekan za naučno-istraživački rad Univerziteta "Džemal Bijedić" u Mostaru |
| 10. Suad Kunosić | Dekan Prirodno-matematičkog fakulteta, Univerziteta u Tuzli |
| 11. Asim Kurjak | Dekan Medicinskog fakulteta Međunarodnog sveučilišta Libertas |
| 12. Krešimir Pavelić | Dekan Medicinskog fakulteta Sveučilišta Juraj Dobrila, Pula<br>Pročelnik i osnivač Odjela za biotehnologiju Sveučilišta u Rijeci<br>Predstojnik i osnivač Odjela za molekularnu medicinu Instituta"Ruđer Bošković," Zagreb<br>Predsjednik Znanstvenog vijeća Instituta „Ruđer Bošković" i član Senata Sveučilišta u Zagrebu<br>Direktor Nacionalog programa za istraživanje raka Ministarstva znanosti Republike Hrvatske<br>Predsjednik Nacionalnog vijeća za znanost Republike Hrvatske<br>Član odbora European Association for Cancer Research<br>Stalni član Standing Committee European Medical Research Council, European Science Foundation<br>Potpredsjednik European Molecular Biology Conference<br>Generalni tajnik European Molecular Biology Conference<br>Član Ex officio, EMBO Council-a<br>Član, European Science Foundation College of Review Panel Members |

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| *Dekani/prodekani/voditelji katedri—bivši i aktualni* | |
|---|---|
| | Član, Expert Advisory Board, Czech Science Foundation |
| | Član panela i recenzent za European Science Foundation |
| | Član Strateging Working Party EMBC |
| | Član Panela Slovenske Zaklade za znanost |
| | Član, Expert Advisory Board, Czech Science Foundation |
| | Član znanstvenog odbora Nahrstoff Akademie Salzburg |
| | Član znanstvenog odbora International Musculosceletal Foundation |
| | Predsjednik Stručnog povjerenstva za dodjelu državnih nagrada za prirodne znanosti |
| | Član Odbora za državne nagrade Sabora Republike Hrvatske |
| 13. Sandra Kraljević Pavelić | Predstojnica Centra za visokoprotočnu analitiku Sveučilišta u Rijeci |
| | Direktorica Doktorske škole Sveučilišta u Rijeci |
| | Članica, European Science Foundation College of Review Panel Members |
| | Članica panela i recenzentica Slovenske Zaklade za znanost |
| 14. Ivica Kisić | Prodekan za nastavu na Agronomskom fakultetu Sveučilišta u Zagrebu |
| 15. Vjekoslav Domljan | Prodekan i dekan Pravnog fakulteta i član Senata Sveučilišta u Mostaru |
| | Dekan Ekonomskog fakulteta SSST |
| 16. Sead Vojniković | Prodekan za međunarodnu suradnju |
| | Šef Katedre za ekologiju šuma i urbanog zelenila |
| 17. Milenko Bevanda | Dekan Medicinskog akulteta Sveučilišta u Mostaru |
| | Pročelnik Katedre za internu medicinu Medicinskog fakulteta Sveučilišta u Mostaru |
| 18. Elbisa Ustamujić | Dekan Fakulteta humanističkih nauka na Univerzitetu „Džemal Bijedić" |
| 19. Frank A. Chervenak | Associate Dean of International Medicine, Zucker School of Medicine at Hofstra/Northwell |
| 20. Sanja Kupešić-Plavšić | Associate Dean for faculty development at Texas Tech University Health Sciences Center El Paso, Texas, USA |
| 21. Selma Harrington | Chair of International Affairs Committee |
| 22. Ljubinko Mitrović | Dekan Fakulteta pravnih nauka |
| 23. Mirza Smajić | Prodekan za nastavu i rad sa studentima na Fakultetu političkih nauka Univerziteta u Sarajevu |
| 24. Tanja Dujić | Rukovoditeljica Katedre za Biokemiju i kliničke analize |
| | Rukovoditeljica Centra za naučno-istraživački rad na Farmaceutskom fakultetu UNSA |
| 25. Ismar Mujezinović | Šef katedre za slikarstvo na Akademiji likovnih umjetnosti u Sarajevu |
| 26. Hrvoje Jurić | Predstojnik Katedre za etiku u Odsjeku za filozofiju Filozofskog fakulteta Sveučilišta u Zagrebu |
| 27. Fahir Bečić | Dekan Farmaceutskog fakulteta Univerziteta u Sarajevu |
| | v.d. Šef Katedre za kliničku farmaciju na Farmaceutskom fakultetu Univerziteta u Sarajevu |
| | Šef Katedre za kliničku farmaciju na Farmaceutskom fakultetu Univerziteta u Sarajevu |
| 28. Šefik Hasukić | Prodekan za nauku i istraživački rad Medicinskog fakulteta u Tuzli |
| 29. Dževad Zečić | Dekan Ekonomskog fakulteta Univerziteta u Zenici |
| 30. Julijana Matanović | Asistentica na Katedri za stariju hrvatsku književnost Pedagoškog fakulteta Sveučilišta u Osijeku |
| 31. Ivo Komšić | Dekan Filozofskog fakulteta Univerziteta u Sarajevu |
| 32. Enes Midžić | Pročelnik katedre za fotografiju na Akademiji dramskih umjetnosti |
| | Prodekan na Akademiji dramskih umjetnosti |
| | Dekan na Akademiji dramskih umjetnosti |
| 33. Tarik Uzunović | Prodekan za naučnoistraživački rad i međunarodnu saradnju na Elektrotehničkom fakultetu, Univerzitet u Sarajevu |
| 34. Dragan Babić | Prodekan za nastavu |
| | Prodekan za znanost i međunarodnu suradnju Fakulteta zdravstvenih studija |
| 35. Amila Ferhatović | Prodekanica za nastavu i studentska pitanja, Pravni fakultet Univerziteta u Sarajevu |
| 36. Lino Veljak | Predstojnik Katedre za ontologiju |
| 37. Izet Rađo | Dekan Fakulteta sporta i tjelesnog odgoja Univerziteta u Sarajevu |
| | Šef katedre borilačkih sportova, Fakultet za šport u Ljubljani |
| 38. Krešimir Rotim | Dekan Zdravstvenog veleučilišta u Zagrebu |
| | Pročelnik Katedre za anatomiju Zdravstvenog veleučilišta u Zagrebu |
| 39. Monika Tomić | Dekan Farmaceutskog fakulteta Sveučilišta u Mostaru |

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|---|---|
| *Dekani/prodekani/voditelji katedri—bivši i aktualni* | |
| | Prodekan na Farmaceutskom fakultetu Sveučilišta u Mostaru |
| 40. Tvrtko Jakovina | Predstojnik Katedre za opću povijest novog vijeka Odsjeka za povijest Filozofskog fakulteta Sveučilišta u Zagrebu |
| 41. Nada Gosić | Pročelnica Katedre za javno zdravstvo na Fakultetu zdravstvenih studija Sveučilišta u Rijeci |
| 42. Nedim Suljić | v.d. Prodekan za naučno-istraživački rad na Rudarsko-geološko-građevinskom fakultetu Univerziteta u Tuzli<br>Prodekan za naučno-istraživački rad |
| 43. Krsto Mijanović | Dekan na Ekološkom fakultetu Travnik u Travniku |
| 44. Kotel Da-Don | Predstojnik Katedre za judaistiku na Filozofskom fakultetu Sveučilišta u Zagrebu |
| 45. Merima Šahinagić-Isović | Prodekan za naučno-nastavna pitanja Građevinskog fakulteta Univerziteta „Džemal Bijedić" u Mostaru |
| 46. Goran Krstačić | Pročelnik Katedre za internu medicinu i kliničku farmakologiju na Zdravstvenom veleučilištu u Zagrebu |
| 47. Damijan Miklavčič | Vice-Dean for Research, University of Ljubljana, Faculty of Electrical Engineering |
| 48. Tamer Bego | Vice-Dean for International Relations, Faculty of Pharmacy, University of Sarajevo |
| *Rektori/prorektori—bivši i aktualni* | |
| 1. Asim Kurjak | Rektor DIU međunarodnog sveučilišta u Dubrovniku |
| 2. Vjekoslav Domljan | Rektor Univerziteta SSST |
| 3. Slavenka Vobornik | Prorektor za nastavu i kvalitet Univerziteta u Sarajevu |
| 4. Fuad Ćatović | Rektor Univerziteta „Džemal Bijedić" u Mostaru<br>v.d. rektora Univerziteta „Džemal Bijedić" u Mostaru |
| 5. Faik Uzunović | v.d. rektora Univerziteta u Zenici |
| 6. Milenko Bevanda | Prorektor za Biomedicinu, Sveučilište u Mostaru |
| 7. Elvir Zlomušica | Prorektor za nauku i naučno-istraživački rad<br>Rektor Univerziteta „Džemal Bijedić" u Mostaru |
| 8. Elbisa Ustamujić | Rektorica Univerziteta „Džemal Bijedić" |
| 9. Antonio Pescape | Rector Delegate for Innovation and Technological Transfer |
| 10. Dževad Zečić | Rektor Univerziteta u Zenici |
| 11. Enes Midžić | Prorektor Sveučilišta u Zagrebu |
| 12. Izet Rađo | Prorektor za naučnoistraživacki rad Univerziteta u Sarajevu |
| 13. Krešimir Pavelić | Pomoćnik rektora Sveučilita Juraj Dobrila u Puli<br>Savjetnik rektorice Sveučilišta u Rijeci |
| *Ambasadori/konzuli/diplomacija—bivši i aktualni* | |
| 1. Žarko Papić | Ambasador u Saveznom ministarstvu spoljnih poslova<br>OECD- Ambasador i šef Delegacije SFRJ pri OECD u Parizu |
| 2. Vjekoslav Domljan | Ambasador BiH za Kanadu i nerezidentni za Kubu |
| 3. Ivica Maštruko | Ambasador SFRJ pri Svetoj Stolici, a zatim veleposlanik RH u Italiji (i Malti), Grčkoj (i Armeniji), te Sloveniji i Rumunjskoj (i Moldovi) |
| 4. Faik Uzunović | Ambasador Bosne i Hercegovine u Pakistanu i Norveškoj |
| 5. Draško Aćimović | Ambasador BiH u Belgiji i Luxemburgu<br>Počasni konzul Ukrajine u Republici Austriji |
| 6. Darko Cvijetić | Počasni ambasador za kulturu "Bosanskog kulturnog centra" u Prijedoru |
| 7. Ćazim Hadžimejlić | Ambasador međunarodne fondacije „Cultural Heritage without borders" |
| 8. Srđan Kerim | Ambasador Makedonije pri Ujedinjenim Nacijama u New Yorku, Njemačkoj, Švajcarskoj i Liechtenstein<br>Savjetnik Predsjednik Šeste Konferencije Ujedinjenih Nacija za Trgovinu i Razvoj<br>Potpredsjednik Samita za financiranje razvoja u Monterju, Mexico<br>Potpredsjednik Svjetske Konferencije za Održivi Razvoj u Johannesburgu, Južna Afrika<br>Specijalni izaslanik Predsjednika Opće Skupštine UN za Revitalizaciju Opće Skupštine<br>Predsjednik Opće Skupštine UN |

*Contd…*

*Contd…*

| *Ambasadori/konzuli/diplomacija—bivši i aktualni* | |
|---|---|
| | Specijalni izaslanik Generalnog Tajnika UN za Klimatske promjene |
| 9. Damir Grubiša | Ambasador Republike Hrvatske u Rimu, na Malti i pri FAO |
| 10. Kasim Trnka | Ambasador BiH u Republici Hrvatskoj |
| 11. Sven Alkalaj | Stalni predstavnik /ambasador, Misija BiH pri Ujedinjenim nacijama u New Yorku |
| | Ambassador BiH u SAD, Washington |
| | Ambasador BiH u Organizaciji američkih država, Washington |
| | Ambasador u Kraljevini Belgiji |
| | Ambasador- Šef misije pri NATO-u |
| | Ambasador u Velikom vojvodstvu Luksemburg (nerezidentni) |
| *Ministri—bivši i aktualni* | |
| 1. Žarko Papić | Ministar za nauku, tehnologiju i informatiku, Vlada SR Srbije |
| 2. Salih Kulenović | Ministar, koordinator za Tuzlansko-drinski region u Vladi RBIH<br>Pomoćnik ministra za energetiku u Vladi RBIH |
| 3. Žarko Primorac | Ministar financija Bosne i Hercegovine |
| 4. Pavo Barišić | Ministar znanosti i obrazovanja Republike Hrvatske |
| | Pomoćnik ministra znanosti, obrazovanja i športa |
| 5. Velimir Srića | Ministar znanosti u vladi Republike Hrvatske |
| 6. Sanja Damjanović | Ministrica znanosti, Ministarstvo znanosti Crne Gore |
| 7. Dejan Jović | Posebni savjetnik ministra vanjskih poslova Hrvatske |
| 8. Srđan Kerim | Ministar u vladi Makedonije, za ekonomske odnose sa inozemstvom te za vanjske poslove |
| 9. Kasim Trnka | Ministar pravosuđa u Vladi Republike Bosne i Hercegovine |
| 10. Sven Alkalaj | Ministar vanjskih poslova u Vladi Republike Bosne i Hercegovine |
| 11. Rasim Gačanović | Ministar prometa i komunikacija u Vladi Federacije Bosne i Hercegovine Rektor/prorektor |

**Tablica 6:** Članovi domaćih i međunarodnih akademija

| *Članstva u drugim domaćim ili stranim akademijama* | |
|---|---|
| Asim Kurjak | European Academy of Sciences and Arts<br>International Academy for Human Reproduction<br>Italian Academy of Science and Art of Reggio Puglia<br>Academy of Medical Sciences of Catalonia<br>Russian Academy of Medical Sciences (foreign member)<br>Russian Academy of Science<br>Hrvatska akademija medicinskih znanosti<br>Akademija nauka i umjetnosti Bosne i Hercegovine<br>World Association of Perinatal Medicine (past President)<br>International Academy of Perinatal Medicine (predsjednik)<br>World Academy of Art and Science |
| Krešimir Pavelić | European Academy for Sciences and Arts<br>European Molecular Biology Organization (EMBO)<br>Hrvatska akademija medicinskih znanosti<br>Hrvatska akademija znanosti i umjetnosti<br>Nahrstoff Akademie Salzburg |
| Mustafa Sefić | World Academy of Art and Science<br>Akademija medicinskih znanosti Hrvatske<br>Akademija medicinskih nauka Bosne i Hercegovine |
| Velimir Srića | European Academy of Sciences and Arts |

*Contd…*

*Contd…*

| *Članstva u drugim domaćim ili stranim akademijama* | |
|---|---|
| Nedim Suljić | European Academy of Sciences and Arts<br>Bosansko-Hercegovačka Američka Akademija umjetnosti i nauka |
| Vida Demarin | Hrvatska akademija znanosti i umjetnosti<br>Hrvatska akademija medicinskih znanosti |
| Muhamed Sućeska | Akademija tehničkih znanosti Hrvatske |
| Vlatko Silobrčić | Hrvatska akademija znanosti i umjetnosti<br>Hrvatska medicinska akademija |
| Emir Fazlibegović | Bosansko-Hercegovačka Američka Akademija umjetnosti i nauka |
| Julijana Matanović | Hrvatska akademija znanosti i umjetnosti |
| Srećko Gajović | European Academy of Sciences and Arts |
| Mirela Delibegović | The Royal Society of Edinburgh, Scotland's National Academy |
| Norman Sartorius | Akademija znanosti i umjetnosti Hrvatske<br>Hrvatska Medicinska Akademija<br>Medicinska Akademija u Peru-u<br>Medicinska Akademija u Meksiku<br>Kraljevska Akademija u Španiji |
| Suada Tinjić | International Academy of Perinatal Medicine |
| Lino Veljak | International Academy for Philosophy, Yerevan (Armenia) - Athens (Greece) - Berkeley (USA) - Vienna (Austria) |
| Ivo Grgić | Akademija poljoprivrednih znanosti, Republika Hrvatska |
| Dejan Jović | European Academy of Sciences and Arts |
| Edina Selesković | Bosanskohercegovačko-američka akademija umjetnosti i nauke |
| Aziz Hasanović | European Academy of Sciences and Arts<br>Bošnjačka akademija nauka i umjetnosti |
| Dragan Babić | Hrvatska akademija znanosti i umjetnosti Bosne i iHercegovine |
| Ivo Šlaus | Hrvatska akademija znanosti i umjetnosti<br>Počasni predsjednik Svjetska akademija umjetnosti i znanosti<br>Član i su-utemeljitelj Academia Europaea<br>European Academy of Sciences and Arts |
| Osman Sinanović | The New York Academy of Sciences<br>Gaetano Conte Academy (for the study of strited muscle diseases), Naples, Italy<br>Akademija medicinskih znanosti Hrvatske<br>Akademija medicinskih nauka u Bosni i Hercegovini |
| Milan Stanojević | European Academy of Sciences and Arts<br>World Association of Perinatal Medicine<br>International Academy of Perinatal Medicine |
| Aida Salihagić Kadić | European Academy of Sciences and Arts<br>International Academy of Perinatal Medicine |
| Aida Kulo Ćesić | European Academy of Sciences and Arts |
| Aleksandar Ljubić | International Academy of Perinatal Medicine |
| Vanja Bašić Kes | Hrvatska akademija medicinskih znanosti |
| Šefik Hasukić | Akademija medicinskih nauka Bosne i Hercegovine |
| Pavo Barišić | European Academy of Sciences and Arts |
| Halima Resić | Medicinska Akademija Bosne i Hercegovine |
| Milenko Bevanda | Hrvatska akademija medicinskih znanosti<br>Hrvatska akademija znanosti i umjetnosti BIH |
| Almir Badnjević | World Academy of Art and Science<br>European Academy of Sciences and Arts |
| Sead Vojniković | European Forester Academic Society |

COMMENTARY

# A Strong Belief in a Better World

Elia Pekica Pagon

## Abstract

Elia Pekica Pagon, Magister Educationis Philologiae Anglica, Magister Educationis Philologiae Italicae, is an established Croatian author (writer and editor) who writes poetry and prose and has published her work in 36 books till now (in 10 of her own books and 26 collective books) in Croatia and the United States of America. Elia's only wish is to give her modest contribution to building a better world in which all people in the world would have equal rights to smile, love, and be happy. In her opinion, every person on our planet needs to have the equal right to medical care, to the joy of life as such, to have a place to live, to have a job that makes someone happy, and to a life worth living. Only when we understand that happiness and sadness in the eyes of other people are connected with ourselves and our happiness and sadness will we be able to understand that we are all connected by invisible threads, both in the real world and in the virtual world in which, as well as in the real world—every moment is precious. Therefore, let's devote all of our life moments to true values and those contents that will make our lives and this world a better and more beautiful, nobler, and more meaningful place. Let's make our socializing both in the real and virtual world more pleasant and beautiful. Let's greet each other warmly, with honest smiles on our faces when we meet. Every kind gesture is beautiful, even the smallest one because it's one step further toward a better world, much better than the one we live in. Let's build bridges, not walls, between each other.

Please read more about Elia on her official website: https://pekica.com/

**Keywords:** Censorship, Equality, Equal chances, Freedom, Freedom of speech, Hypocrisy of democracy.

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## Summary

My dear friends, how great it is to know that there is always a way out of any situation we may find ourselves in, that there is always a door or a window somewhere. No one can lock freedom to such an extent that it will not find its way out to breathe again. To be out in the open, clean air. Freedom will always find its way to exist, one way or the other.

Unfortunately, nowadays an incredible amount of money is being invested in the effort to close the internet as we knew it, that is, the internet as it once was, when it first appeared on the stage as our link with the rest of the world, offering us freedom of speech, as a new world miracle that will give us a sense of equality and unity with the rest of the world and provide every person in the world with the same amount of media space. Every voice has to be heard, they said, and we really believed them. We trusted the powerful globalists, and they decided to give everyone the opportunity to have his or her voice heard. Our trust was misplaced and the freedom short-lived.

But, well, now we finally know that it was all just a trick or, even better—a trap they were dragging us into, and we naively fell for it, believing that someone was truly thinking about the welfare of humanity and the communication between people in real-time. The internet is definitely no longer what it once was and what we thought it was in the beginning.

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All information is filtered and strictly controlled according to the familiar model—that the public should only be able to access what the rulers like and nothing else. The truth about this world needs to be hidden so that the lies can rule the world.

Noam Chomsky explained this phenomenon of the reign of terror in the field of controlling "freedom of speech" using the examples of well-known historical criminals such as Joseph Goebbels and Joseph Stalin; "Goebbels was a supporter of freedom of speech for the opinions he liked. Stalin was like that, too." Chomsky said: "If you truly believe in the freedom of speech, then you should support free speech for the opinions you may despise as well as those you agree with. Otherwise, you are not a true supporter of free speech." Not everyone should think alike. We are all different

and entitled to have our own views about the world we live in. No one should tell us what to think, say, or write because then it becomes a dictatorship.

Censorship is the best proof of the hypocrisy of democracy and its false promises of freedom of expression. Unfortunately, censorship has never been stronger. Every day, new digital prison bars, quarantines, walls, fences, and barbed wires are springing up all over the internet, turning that virtual space into one big camp full of prisoners of their own belief in the freedom of speech. What a paradox—what traps us and locks us up in digital prison cells is precisely our belief in freedom of speech.

False promises of freedom are obviously no longer to be believed in. The self-proclaimed "owners of truth" prescribe ways of thinking to humanity and determine what can and cannot be published on the internet. Censors are the ones who determine what is true and what is false, and we all know that lies are new truths, just as every truth is labeled a lie. How sad.

Let's remember what Benjamin Franklin, one of the authors of the Declaration of Independence (1776), said a long time ago: "He who wants to take away the freedom of a nation will first start by restricting the freedom of speech." Philosopher John Stuart Mill asked a hypothetical question—what would happen if all of humanity, except for one person, had the same opinion about everything? Humanity would have no more right to silence that person than that person would have if given the power to silence all of humanity. Therefore, let's be aware that power in the hands of one person or a few people can be devastating for the rest of humanity if people are not aware of the power of togetherness and unity.

The system has turned people into scared little pawns in an ongoing game of chess. Professor PhD Slavko Kulić once said that humans are basically "a primitive species that has agreed to live in subjection as a form of its existence." It was as if they had given up any struggle and surrendered to their comfort zone. But they are not aware of the fact that the price of that comfort is the loss of their own integrity, which they obviously don't care about.

Acting as modern gods, the powerful offer us submission through piety (read—devotion to them as modern gods) as the only way to survive. They keep offering us a reality that we must take for granted. They are offering us their own version of reality in which they see us as their slaves, not a reality that we all create together, that is, the reality in which we ourselves have the right to participate. We, as common citizens of the global village, are not entitled to think differently, let alone with our own heads; we are not allowed to think at all. It seems as if they are saying to each and every one of us—keep quiet, kneel down, and submit.

The comfort zone is being promoted as something very desirable. It became the easiest way to survive. You just have to be a decent, obedient, and submissive citizen with a plaster over your mouth. Such people are doing best today. They don't care about the freedom of speech. It's a forbidden subject to them. They sold their soul to the devil. They paid a high price for their peaceful and safe life with their silence.

In these absurd and abnormal times we live in, the hardest thing is being someone who isn't afraid to speak his or her mind, especially if that opinion goes against the established narrative or is critical of the system. The system expels such people, denounces them, silences them, obscures them, blocks them, deplatforms them, and puts a plaster over their mouths at any cost.

Do we really have to agree on everything? Do we all have to think the same about everything? I totally agree with George Orwell, who said: "If freedom means anything, it is the right to tell people what they don't want to hear."

It is up to the people to decide. To stand in one or another column on the way to *Neverland*, designed by the self-proclaimed rulers of the world. In one column, we have the silent followers of the rulers who are convinced that their slavery guarantees them their well-being, and in the other, there are prisoners of their own belief in freedom as such. And, sadly, there is no freedom in sight in any of those columns.

Freedom is only within us; it is our inner cry, our inner eye with which we observe this world. And we can find it every day in a different way if we decide to. When one door closes, another one opens, and so on from day to day. When one light goes out, a new one lights up. And there is always some new way to be free and happy again.

Life is an exciting journey full of challenges. The more traps we find on our way, the more we are inspired to build a better world in which we firmly believe, a world without fences, walls, barbed wires, and prison bars behind which the ruling class tries to place our thoughts and our words.

The task of the censors is to build a strictly controlled, dark world deprived of truth and freedom. This is clear to all of us, and it's more than sad to witness all this after so many hypocritical promises of great democrats about freedom and democracy and the virtual world as a space of equality and freedom for all the citizens of the world.

Talking about some kind of supposed openness of the network on the one hand, and on the other hand, closing it down more and more each day under the pretext of the danger of some "hate speech" or supposed "disinformation," "misinformation," or "malinformation" is more than contradictory. The powerful are jumping into their own mouths and being extremely hypocritical.

Let us recall what US Secretary of State Antony J Blinken said in his introductory presentation on "Advancing Technology for Democracy" as a part of the Democracy Summit in Washington, DC, held on 30th March 2023: "On behalf of the American people, we promote, and we demonstrate democratic values and advance a free, peaceful and prosperous world." That sounds so nice and promising, right?

On that occasion, Blinken also spoke about the "open internet" as a symbol of democracy, and we all know how diligently the globalists are working to close it.

Witnessing all that, it's normal to ask ourselves—is the closed internet really a representative image of democratic

values? Let the globalists continue setting their traps. We will continue to successfully jump over them and find inspiration in them to continue building a better world without walls and repressive measures that stifle freedom and the beauty of life. We are here to build bridges between people, times, and spaces, to communicate with each other, and to enjoy the beauty of life.

How nice it is to know that evil can be inspiring and encourage us to be creative. Let's enjoy life's challenges and believe in a better world because we all know that it's possible; it's just around the corner, waiting to be discovered. Let's not believe those people who are doing everything in their power to assure us that it is impossible. They are trying to deceive us and demotivate us. They want to stop us on our way to its realization. Let's not give up. Let's be persistent and full of faith in good. It is our strongest weapon against evil, which loses in every battle with good. Let's not forget that.

COMMENTARY

# How to be a Great Communicator?

Marko-Ivan Pekica

## Abstract

Marko-Ivan Pekica is an internationally known Croatian communicologist, poet, professor, lecturer, journalist, writer, screenwriter, art photographer, director, and marketing expert. As a lecturer, he dedicated himself especially to communication, which became his main interest. In this text, Marko is talking about the skills of a great communicologist and how everyone can improve their communication skills and become better public speakers.

**Keywords:** Communication, Communication skills, Great communicator, Improving communication skills, Listening, Public speaking.

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Indeed, each of the four mentioned communication skills is very important. However, here, we must not forget about our behavior, nonverbal communication, our facial expression, the movements of our body, the work of our hands, our warmth, spontaneity, our passion, our enthusiasm, our availability, and certainly our sense of other people, our interlocutors, that is, our audience.

In order to succeed in this, we must rid ourselves of all human evils, immorality, and ignorance.

Yes, it is knowledge that can help us to be more relaxed, comfortable, and unburdened by fear in our communication.

We will be more relaxed and confident if we have something interesting to say and if we are familiar with the topic we are going to talk about, that is, if we are well-prepared. In each of our public appearances, it is important that we have experience, that we have a strong personality, that we are confident in ourselves, that we have the gift of speaking, and what is very important, as mentioned before—that we are always well-prepared for each public appearance.

In our communication, we must always be honest. Honesty really is the best policy. Honest people are always relaxed because they have nothing to hide. They are on the stage, openly exposing themselves and their hearts to their audience. There is nothing behind the curtain.

Here, we must not forget about one more detail, and it reads—let's know how to listen (communication begins with preparing our ears to hear).

Let's be patient and aware that communication is a two-way process (exchange of thoughts, ideas, attitudes, and emotions).

Let's not forget—communication is a dialog, not a monolog.

Let's always give priority to our interlocutor. Let's never interrupt someone; we will always profit more if we know how to listen. An old Latin proverb says—*Unum os, duos oculos et duas aures habemus, ut melior audiamus et minus loquamur* (We have one mouth, two eyes, and two ears so that we can listen more and talk less.). So, let's behave like that in our communication.

If we are in a position to give a public lecture, presentation, or any kind of public speech, if we really want to be heard and be successful, we always have to subordinate our speech (language), our way of expression to our interlocutor or audience.

We must pay attention to the tone of our voice, our diction, the simplicity and clarity of our expression, the speed and tempo of our speech, and perfect knowledge of the topic we are going to talk about. All this must be accompanied by a smile and cordiality.

Let us always strive to give others and ourselves peace and love, hope, empathy, and understanding. We have to know how to build, nurture, and shape all this.

Let's forget about haste, nervousness, and grumpiness—these are all negative energies that destroy the atmosphere and suffocate all present interlocutors in their efforts to establish pleasant communication.

Let's mention something else here, something very important, and that is the first impression. The first impression is made only once and never again. Let's remember that we will never again be given the opportunity to make a first impression.

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In our communication, let's be tolerant, self-confident, and humble. Let's know how to shape it, how to express it with our behavior and beautiful words. The truth, psychologists say, always contains the beauty and pleasantness of companionship. Honesty is so beautiful and so positive. Let's always use it in our communication. Let's be honest with each other—the truth provides unprecedented pleasure to all interlocutors, while a lie suffocates communication completely and closes all communication channels because you can always feel when someone is lying.

Every contact with other people (every communication) gives us a chance and opportunity to express ourselves in the right light.

Let's never let our emotions get out of control. Let's use every opportunity in our communication to shine and delight. Let's use the opportunity that has been given to us to express ourselves in the right way in any type of public performance. Always tend to be authentic, be who you are, and you will never go wrong.

Normally, success and applause will never fail if we are prepared for our performance in the right way (we know how to drive on macadam).

In our private and business lives, let's be modest, reasonable, humble, diligent, and positive. Believe me, by behaving that way in life, we will always be more appreciated, respected, and loved.

Let's never live other people's lives; let's focus on our own lives, let's live for our dreams and our goals.

Let's remember Winston Churchill, who always emphasized spontaneity and self-belief, not forgetting to tell us—"Never give up, and when you get to the zone of hell, don't stop, but keep walking."

Be sure, you will reach your intended goal, and to conclude—all of us who at any time in our lives had problems with posture, bad habits, and undesirable behavior, it would be good if we start working on changing our behavior and the behavior of our life companions and associates right now. And, at the very end, I beg you to remember—reputation requires appearance and good behavior.

A true communicator has a wide range of interests, is easily accessible, and has a feeling for other people. He is tolerant and, above all, respects the golden rule of communication—truth. When he speaks, he speaks in such a way that he is being heard, that he is willing to be listened to. When he writes, he writes in such a way that he is happy to be read (he always takes care of his interlocutor or audience).

He knows how to choose the right words. He always takes care of the rhythm and diction of his public speaking. He never gives a monolog to his audience because he knows that communication is a dialog (i.e., a two-way process). With his nonverbal and verbal communication, he knows how to use etiquette. He rarely uses the personal pronoun "I". For him, the most important personal pronoun is "we". It's always in the first place. "We" lifts our spirits, spreads positive vibes, and brings people closer together. Good communicator travels through life with his ears as his closest and greatest companions. He is charismatic, characterized by humanity, high morality, and wit. He is aware that communication begins with preparing our ears to listen and really hear what other people have to say. Every voice deserves to be heard. Good luck!