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Sciendo

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Markers of Ecological Conversion

The appearance of the encyclical *Laudato si'* was received with great attention not only by Catholic circles but also by many people genuinely concerned with "care for the common home" that is the natural environment. Embedded in the encyclical is a call for ecological conversion, which is to create greater awareness of environmental issues among many people including Christians. As Dominique Lang observes, we can speak of an emerging "generation of *Laudato si*"².

The reason is simple: *Laudato si'* is a word from the Church on the greatest challenge of our time: the ecological crisis. Indeed, an ecological conversion cannot be thought of without placing it in the framework of an imminent and major peril to the living conditions of our species, on the only known habitable planet, a peril that is the subject of the most solid scientific consensus³.

The Principle of "Connected Vessels"

Ecology cannot be reduced to some vague current philosophical, fashionable phenomenon, or else left ideology. As Pope Francis reminds us in the encyclical

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² D. Lang, Génerations "Laudato si", Paris 2020.

³ W. Kluj, *Ecological Conversion and Mission* [in:] *Europen Mission Studies nr 3, "Laudato si'" and Mission*, ed. K. Vellguth, W. Kluj, F. Wijsen, Warszawa 2021, pp. 37-38.

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Laudato si', ecology is above all the scientific discipline which studies the relationships of living beings with each other and with their environment:

This necessarily entails reflection and debate about the conditions required for the life and survival of society, and the honesty needed to question certain models of development, production, and consumption. It cannot be emphasized enough how everything is interconnected. Time and space are not independent of one another, and not even atoms or subatomic particles can be considered in isolation. Just as the different aspects of the planet – physical, chemical, and biological – are interrelated, so too living species are part of a network which we will never fully explore and understand. A good part of our genetic code is shared by many living beings. It follows that the fragmentation of knowledge and the isolation of bits of information can become a form of ignorance unless they are integrated into a broader vision of reality" (LS 138)⁴.

Without taking into account the laws that it reveals around us, in the oceans, the forests, the soil under our feet, and even in our organisms, we cannot apprehend the ecological stakes of our century, much less position ourselves *vis-à-vis* them. What does this branch of the life sciences teach us?

The research object of ecological science is the ecosystem. The creator of the ecosystem concept and the introducer of this term into ecology is considered to be an English botanist Arthur Tansley (1871-1955). According to him, this term should be used to describe all plants and animals that inhabit a specific area, together with the physical and chemical environment in which these organisms live and with which they remain in mutual relationships⁵. The ecosystem is therefore a place or environment, is a group of animal and plant communities, is also a set of interdependencies between them. An ecosystem is characterized not only by the dependence of some components on others but also by the dependence of individual components on all others and by their combination⁶.

Ecology does not limit its interest to only so-called natural systems. It also examines the entire broader environment. Hence, an important object of interest to ecologists is anthropogenic systems, that is, shaped by humans. Describing relations in such systems they also pay attention to the influence of human activity on the functioning of nature. According to many ecologists, human activity influences the current state of nature. It concerns first of all transformations

⁴ Francis, *Laudato si'*, Encyclical Letter on Care for our Common Home, Rome 2015. Abbreviated below to LS.

⁵ A. Mackenzie, A.S. Ball, S.R. Virdee, *Ekologia*, trans. M. Kozakiewicz, A. Kozakiewicz, K. Dmowski, Warszawa 2000, p. 214.

⁶ A. Nason, R.L. Dehaan, *Świat biologii*, trans. H. Gutowska, Warszawa 1987², p. 625.

connected with agriculture and industry, dynamizing the so-called civilization progress of mankind. Some of them speak directly about the necessity of limiting human interference in natural systems. Care for nature, in the circles of ecologists, is sometimes perceived as a specific mission⁷.

Mahaut and Johannes Herrmann try to summarize in a few key sentences the major laws of life of the living observed by scientific ecology: living species, including our own, are not free to thrive equally in any environment, geological, pedological, climatic, nor at the sides of any other species; they tie relations of great complexity that cannot be reduced to competition or predation; much more, the presence of some, strongly conditions the survival of some others. Within the living world, everything is a relationship, everything forms a system, and this is relevant at all scales. The ecological requirements of a species can be very broad and flexible (man, mosquito) or on the contrary extraordinarily narrow. Each species is thus a very particular way of inhabiting this world, with its physical characteristics and its billions of other inhabitants. We can touch the incredible specialization of which the living is capable by this figure: nine thousand species of beetles on a single tree in the equatorial forest. This is just one instance of the diversity of life, biodiversity, and its complexity. Without reaching such levels of profusion, it is the same, in our temperate regions, with plants and insects, trees and mussels and salmon, not to mention bacteria. The number of species contained in a square meter of the forest floor is counted in millions. This shows how much we share the earth with human kind, forming interlocking ecosystems in an unheard-of tangle and how vain the fantasies of replacing extinct species with GMOs resistant to global warming are. Although the global functioning of these systems is now well understood, large parts of them remain to be discovered, particularly in the soil, which is thought to contain more than 20% of all biodiversity. The soil controls the main biogeochemical cycles, through which nutrients circulate from species to species, thus allowing the existence of life⁸.

Such is the world that we observe, the one described by science, the one where the Creator placed us: a world whose habitability, for all species, starting with our own, depends on networks of interactions with billions of agents, all different. It is them, and only them that make our agricultural production possible, as well as the maintenance of a breathable atmosphere, not to mention innumerable other productions (wood, medicinal plants, fishery resources...). The totality of ecosystem services – all that humans derive directly from the existence of *wildlife* – is estimated to be roughly equivalent to the global GDP. Beyond the modalities

⁷ M. Wyrostkiewicz, *Ekologia ludzka. Osoba i jej środowisko z perspektywy teologicznomoralnej*, Lublin 2007, pp. 29-30.

⁸ M. Herrmann, J. Herrmann, *La conversion écologique, une urgence (aussi) théologique,* "Nouvelle Revue Théologique" vol. 142 (2020) 4, p. 543.

of this evaluation, what science underlines with this observation is the dependence of the human species on the existence of this *wildlife*, of wild ecosystems in a decent state of functioning. Any reflection on the contemporary ecological question must take into account this teaching of the life sciences: a world that would no longer be habitable by a significant and by important and functional biodiversity would be one accessible to our species⁹.

Climate Change and the Existential Crisis

The first reports of climate change date back to 1979, when the U.S. Department of Energy published data showing an increase in greenhouse gas concentrations in the atmosphere. In 1987, NASA Chief Climatologist James Hansen presented before a U.S. Congressional Committee the results of a multi-year study indicating that the average temperature of the atmosphere had increased by 0.9°F over the century. This was also when the terms "climate change" and "global warming" were first used. The results of NASA's research, as well as that of other science centers, were so disturbing that it became necessary to undertake further more thorough research into climate change. Thanks to the cooperation of two institutions belonging to the UN: the Environmental Program and the World Metrology Organization, the Intergovernmental Panel on Climate Change (IPCC) was established in 1988. Thanks to the work of researchers gathered in the IPCC, knowledge about the causes of climate change has greatly improved. The first Intergovernmental Panel on Climate Change report only indicated that anthropogenic emissions of CO₂ NH₄ and CH₄ contribute to their concentration in the atmosphere. In contrast, subsequent reports have cited evidence that humans have had the greatest impact on climate over the past 50 years¹⁰.

Scientists involved in the latest (sixth) Assessment Report (2021) from the Intergovernmental Panel on Climate Change (IPCC) do not doubt that humans are responsible for climate change and that there is little time left to stop it. The dramatic alternative is to pass so-called tipping points, where changes will be irreversible. The authors of the report predict that climate change will intensify in all regions in the coming decades. With global warming of 1.5°C, heat waves will increase, we will face longer warm and shorter cold seasons, and with global warming of 2°C, extreme temperatures will more often reach critical tolerance thresholds for agriculture and human health. Scientists are noticing changes in

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⁹ Ibidem, pp. 544-545.

¹⁰ Z.M. Karczun, "Laudato si'" wobec problemu ochrony klimatu [in:] Kościół i nauka w obliczu ekologicznych wyzwań. Źródła, inspiracje i konteksty encykliki "Laudato si'", ed. J. Poznański, S. Jaromi, Kraków 2016, pp. 229-230.

the Earth's climate in every region and across the climate system. In 2019, atmospheric CO_2 concentrations were higher than at any time in the past 2 million years. Methane and nitrous oxide recorded the highest concentrations in 800,000 years. For 40 years, each successive decade has been warmer than the previous one. Many of the changes we are observing now have been unprecedented over thousands of years, and some of them, like the continued and accelerating rise in sea level, are irreversible. We know that the oceans are warming and acidifying, climate zones are shifting toward the poles, precipitation patterns are changing, glaciers are retreating¹¹.

Laudato si' Facing Climate Change

As it seems, the data from the IPCC's reports were familiar to Pope Francis, which he used in preparing the encyclical *Laudato si'*. This can be inferred from the following words of the encyclical:

A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system (...) It is true that there are other factors (such as volcanic activity, variations in the earth's orbit and axis, the solar cycle), yet several scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gases (carbon dioxide, methane, nitrogen oxides, and others) released mainly as a result of human activity (LS 23).

The Holy Father also points to the causes of the observed climate change. According to him, these include: "a model of development based on the intensive use of fossil fuels, which is at the heart of the worldwide energy system. Another determining factor has been an increase in changed uses of the soil, principally deforestation for agricultural purposes" (LS 23). This arrangement should not be surprising. It is an expression of concern for the common good, which is the climate, as well as a conviction that the protection of natural environmental resources is one of the ways to realize the commandment of love of neighbor. Benedict XVI was the first Pope to directly point out the need to combat anthropogenic climate change. He called on politicians to work more actively in this area and to conclude a global climate protection agreement at the Copenhagen Climate Summit (September 24, 2009):

¹¹ Sixth Assessment Report: Climate Change 2021: The Physical Science Basis, https://www.ipcc.ch/report/ar6/wg1/?fbclid=IwAR3y6M_RyokswS6LzdjMe167KcjglbCT2Df6E qrkvzWxFwHvbYAw8kW8cUQ [accessed 1.09.2021].

I wish to reflect today upon the relationship between the Creator and ourselves as guardians of his creation. In so doing I also wish to offer my support to leaders of governments and international agencies who soon will meet at the United Nations to discuss the urgent issue of climate change¹².

In this context, Benedict XVI's decision to install 2400 photovoltaic cells on the roof of Paul VI Hall to generate electricity for heating, cooling, and lighting all the buildings seems important. Thanks to that, the Vatican is the first country in the world where the amount of emitted CO_2 was limited to zero¹³

This fact is of symbolic importance due to the micro-scale of this project. However, it is an unequivocal endorsement of the science that points to the causes of climate change. If we add that man has an impact on climate change, then in a spiritual and moral dimension he cannot remain idle. Hence the moral imperative, both for the natural environment, which is God's gift to man, and for future generations, not to allow the degradation of nature's resources, including the climate, as Francis puts it:

We see increasing sensitivity to the environment and the need to protect nature, along with a growing concern, both genuine and distressing, for what is happening to our planet (...). Our goal is not to amass information or to satisfy curiosity, but rather to become painfully aware, to dare to turn what is happening to the world into our suffering and thus to discover what each of us can do about it (LS 19).

The Faith and Science on the Issue of Ecological Conversion

Approval of the results of scientific research indicating the inevitability of climate change, largely caused by human activity, provokes concrete actions to stop it. Pope Francis takes up this challenge. However, in the encyclical, he does not give ready-made prescriptions and proposed solutions in economic or scientific terms. As he states, "The Church has no reason to offer a definitive opinion" (LS 61). However, the Church should promote a serious debate among supporters and opponents of climate change and those who argue that environmental problems will solve themselves through the application of new technical and economic solutions, as well as those who call for a reduction in anthropopressions

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¹² Video statement of His Holiness Benedict XVI to The Un Summit on Climate Change, https://www.vatican.va/content/benedict-xvi/en/messages/pont-messages/2009/documents/hf_ben-xvi_mes_20090924_summit-climat-change.html [accessed 14.09.2021].

¹³ W. Bołoz, S. Jaromi, Z. Karczun, Z. Łebko, A. Papuziński, R.F. Sadowski, *Ekofilozoficzne przesłanie encykliki "Laudato Si"*, "Studia Ecologiae et Bioethicae" 14 (2016) 4, pp. 121-122.

against the environment. However, the Church has not remained passive in the face of the problem:

But we only need to take a frank look at the facts to see that our common home is falling into serious disrepair. Hope would have us recognize that there is always a way out, that we can always redirect our steps, that we can always do something to solve our problems (LS 61).

What distinguishes the encyclical *Laudato si'* from other major international environmental documents is primarily Francis's emphasis on moral issues. He points out that the main cause of anthropogenic climate change, and more generally of the destruction of the natural environment, is man's greed and selfishness, in short, his sin. The Pope states explicitly, "environmental deterioration and human and ethical degradation are closely linked" (LS 56). On this point, Francis condemns the possessiveness of the countries of the rich North and of the large corporations that have incurred an "ecological debt" with the poor countries, degrading their natural environment through a predatory economy:

We note that often the businesses which operate this way are multinationals. They do here what they would never do in developed countries or the so-called first world. Generally, after ceasing their activity and withdrawing, they leave behind great human and environmental liabilities such as unemployment, abandoned towns, the depletion of natural reserves, deforestation, the impoverishment of agriculture and local stock breeding, open pits, riven hills, polluted rivers, and a handful of social works which are no longer sustainable (LS 51).

Despite such pessimistic scenarios for the future, the Pope remains optimistic about man's potential in this regard, "Men and women are still capable of intervening positively. For all our limitations, gestures of generosity, solidarity, and care cannot but well up within us, since we were made for love" (LS 58). Francis sees a change in human attitudes, in an increase of responsibility for the weak, in a sense of solidarity with present and future generations, a fundamental factor that can lead to the desired changes. Calling for a change in behavior, the formation of new attitudes, and a sense of responsibility for the world around us, he asks, "What would induce anyone, at this stage, to hold on to power only to be remembered for their inability to take action when it was urgent and necessary to do so?" (LS 57).

We can then measure how great, at all times, the responsibility of men towards the Creation that God has entrusted to them is. To be concerned about the Creation, to manage it with harmony and discernment, to use its resources to live, all this does not result from the ecological collapses of our time: it is a moral duty

since the beginning of time. As rightly noted by M. and J. Herrmann, Christian ecology is not primarily a reaction in times of crisis, it must be constitutive of the relationship to the world. Ecological collapses are consecutive to the imbalances inflicted by man on ecosystems and on the dynamic natural balances which guarantee the conditions of life on Earth of the human species. There is therefore a double urgency for Christians to enter into a radical ecological conversion: to allow the survival of humanity and to be faithful to God's plan for the world He created¹⁴.

Ecological conversion grows out of the stem of the encounter with Jesus and is realized through right relationships with the world around man, "Living our vocation to be protectors of God's handiwork is essential to a life of virtue; it is not an optional or secondary aspect of our Christian experience" (LS 217). Certainly, the right way for the ecological conversion, which is part of the order of creation and redemption, is to abandon the "predatory" lifestyle that has been on the rise in recent decades, bringing many tangible benefits to man. On the other hand, one can talk about its harmfulness as it threatens not only the entire ecosystem but also the people living in them. This simple observation must lead the sensible man to change his view of the world from now on, to apprehend its limits, its very concrete finitude, and to think of another form of progress that does not compromise the future. Hence the postulate to create our future in harmony with nature, not against it in a very concrete and pragmatic way (agri-ecology, restoration of ecological connections and destroyed environments, reduction of the resources, and soil artificialisation...)¹⁵.

The biblical message on creation, in the context of the ecological crisis currently being experienced, can help us to undertake this work with a renewed heart, turned towards the respect of the living rather than towards the race for profit which has led us to the brink of the abyss. Thus, ecology ceases from being a heavy set of charters and prohibitions plastered on the old paradigm – as M. and J. Herrmann note – to become "a new and vivifying breeze". The danger of not acting in time is immense, but success would bring us much more than a simple technical solution to a biological crisis: link humanity reinscribed in the heart of the divine project, the end of a war of extermination that no longer has any reason to exist. It is even going further than an ecological approach of sobriety, of degrowth – whatever the terms – which would only be an adaptation to circumstances. Every living being has its role in nature and a value of its own in the eyes of the Creator, which would create a wonderful opportunity to reconcile the whole¹⁶.

¹⁴ M. Herrmann, J. Herrmann, La conversion écologique, une urgence (aussi) théologique, p. 555.

¹⁵ Ibidem, p. 556.

¹⁶ ¹⁶ Ibidem.

The ecology calls us to a conversion that is neither mutilation nor paganism or left ideology. Instead, it places us at the heart of the garden entrusted to us, "kings to serve" in the manner of Christ. We are at the same time this "prodigy, this astonishing being" that God chose to become incarnate and this primate mammal that appeared a blink of an eye ago, on the scale of geological time. M. and J. Herrmann point to an interesting concept of ecological conversion: Within ecosystems, we occupy neither the summit nor the center, because there is none. Taking ecology seriously thus leads us to decenter ourselves, to come down from the throne where we have perched ourselves, and to reject our false "connected" gods, in favor of a deeply theocentric vision. Like the prodigal son, we have made ample use of the inheritance entrusted to us by God. It is exhausted, and famine is on the prowl. But if we return - if we convert - we will be converted - we will be welcomed as sons, not as slaves. The ecological conversion has nothing to do with a slavish reinvention of some mythical past more or less distant. Our creativity, our freedom will be stimulated there as much, only turned towards other goals, in other ways. The danger, of course, is that there is no time left at all. This conversion must be simultaneously thought out, carried out, and translated into action. In the end, there are, certainly not the times announced by the prophet Isaiah: when "the nursing child shall play over the hole of the asp, and the weaned child shall put its hand on the adder's den" (Isa 11, 8), but at least the universal brotherhood preached by Francis of Assisi and the hope of peace with the only small corner of the capable Universe, to this day, of welcoming us¹⁷.

Conclusion

An ecosystem functioning on the principle of connected vessels suggests the interdependence of organisms which is clearly defined by "integral ecology". It is rooted in the concept of "integral development", inviting us to take into account all the dimensions of human life and all creatures. "Everything is given" – is the next key expression. Creation is a gift received, which encourages gratitude and gratuitousness. These inner attitudes lead to the recognition of the proper value of every creature and allow us to perceive creation as a good whose destination is universal. "Everything is fragile" – this fragility is an invitation to respect but also to welcome new possible beginnings, beyond death. It prevents ready-made solutions. On the contrary, the Church advocates "dialogue", at the international level as well as at the national and local levels, between politics and economics, religion and science.

¹⁷ Ibidem, p. 557.

The main message of the encyclical *Laudato si*' is contained in the statement: "on care for our common home" where everyone should be able to feel at home, without certain countries monopolizing goods for themselves, accumulating an "ecological debt" that they do not want to recognize. Francis advocates a true "ecological conversion", including a change of lifestyle but also of outlook and spiritual attitude. The Pope invites us to a "cultural revolution", able to help us redefine the idea of progress, not limiting it to material comfort but reexamining what makes life valuable.

Without a conversion of the heart, we fall too easily into the trap of the mind, where we fill our heads with good honest intentions, positive thoughts, and ideas, but at the same time, we lack the inner drive and motivation to bring about the change we seek. And if we are to tackle today's ecological crisis a deeper conversion is essential. Because despite our best intentions otherwise, if our hearts are set on advancing our wealth, social status, and security, our behaviors will most likely become consumeristic, materialistic, and controlling. Thus, a conversion of the heart is not a simple romantic idea, but rather the hard and difficult path laid out in Christian prayer and spirituality.

Summary

Conversion is a transformation altering worldviews and identities through changed awareness of self, community (including religion, society, politics, economics and industry) and global ecology. The guiding principle of *Laudato si'* by Pope Francis is contained in several points, "Everything is related", relies on scientifical findings: life on Earth's current forms depend on natural equilibriums. Biodiversity collapse and global warming are two deteriorations which deeply threaten the humanity survival. Christian tradition offers some precious assets to face this emergency, and become committed, as a Christian, in ecological causes: Ecological conversion is essentially a return to the realization of God's will in the matter of caring for one's home.

Keywords

Ecosystem, ecology, ecological crisis, ecological conversion, Laudato si'

Znamiona nawrócenia ekologicznego

Streszczenie

Nawrócenie jest procesem zmieniającym światopogląd i tożsamość dzięki przemianie świadomości siebie, wspólnoty (w tym religii, społeczeństwa, polityki, ekonomii i przemysłu) oraz globalnej ekologii. Przewodnia myśl encykliki *Laudato si*' papieża Franciszka sprowadza się do stwierdzenia, że "wszystko jest ze sobą powiązane", co opiera się na odkryciach naukowych: życie na Ziemi w obecnych formach jest zależne od równowagi ekologicznej. Zachwianie ekosystemu i globalne ocieplenie to dwa zjawiska zagrażające życiu ludzkiemu. Tradycja chrześcijańska oferuje pewne rozwiązanie, aby stawić czoła sytuacji kryzysowej i zaangażować się, jako chrześcijanin, w sprawy ekologiczne: nawrócenie ekologiczne jest w istocie powrotem do realizacji woli Bożej w kwestii troski o własny dom.

Słowa kluczowe

Ekosystem, ekologia, kryzys ekologiczny, nawrócenie ekologiczne, Laudato si'

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