

SCIENCE, RELIGION, AND THE MEANING OF LIFE AND THE UNIVERSE: “AMALGAM” NARRATIVES OF POLISH NATURAL SCIENTISTS

by Maria Rogińska

Abstract. This article deals with phenomena occurring at the interface of the existential, the religious, and scientific inquiry. On the basis of in-depth interviews with Polish physicists and biologists, I examine the role that science and religion play in their narrative of the meaning of the Universe and human life. I show that the narratives about meaning have a system-related (“amalgam”) character that is associated with responses to adjacent metaphysical questions, including those based on scientific knowledge. I reconstruct the typical amalgam questions of Polish scientists and come to a conclusion about the stability of religious and nonreligious amalgams in this group. Critically referring to the thesis concerning the secularizing impact of science, I conclude that science by itself does not have a destructive effect on Polish scientists’ confidence that life and the Universe are meaningful, but is rather an exacerbating factor of the existing worldview system.

Keywords: amalgam thesis; in-depth interviews; meaning; Polish natural scientists; religion; science

Max Weber wrote on humans’ innate deep sense of meaninglessness that underlies the Universe and that it is most effectively opposed by religion. Religious doctrines traditionally endowed the cosmos with clear meaning and purpose until disenchantment and the decline of religion deprived man of the confidence that his earthly labors and sufferings are not in vain ([1918] 2004). In the course of modernization and secularization, the modern-era Universe, described by the cold language of science, has lost its teleological dimension and eschatological promise.

Weber was not the first to note that the existential drama of contemporary humanity unfolds against the background of nature, as understood in natural science categories. Weber’s contemporaries and followers shared

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his post-Enlightenment belief that religion and religious meanings will lose their value due to the development of scientific knowledge. This view of science fits well, not only in the Weberian concept of disenchantment, but also in the theory of secularization from the 1960s, and to a large extent it is preserved in the sociological discourse nowadays (Leuba 1934; Stark 1963; Anthony Wallace 1966; Gellner 1992; Larson and Witham 1998). Thus, the thesis about the secularizing influence of science is one of the key philosophical and sociological discussions about the formation of modern societies, crucial particularly for Europe, where—unlike much of the rest of the world, which is still largely religious—the theories of secularization proved to be accurate. In this article, I critically address this thesis to try to understand exactly what role science plays in the modern meaning-making processes associated with comprehension of the Universe and human life.

Attempts to explain what happens in modern societies within the sphere of religious meaning often use the notion of the ability of religion to organize individual and social experience. Religions offer complete systems of meanings or, in the language of Peter Berger and Thomas Luckmann (1966), symbolic universes that contain interconnected explanations of the world. Such holistic views of the world in contemporary European society with its cultural pluralism, institutional differentiation, and individualism are most susceptible to decay. If their vulnerability does not evoke any doubts, then the processes emerging from the “ruins” of the old systems of meaning continue to be underinvestigated. What exactly happens with the individual worldview in a society that no longer offers convincing answers to the ultimate questions? Even less clear is the role played in this respect by science and scientific descriptions of the world as well as their cultural “echo,” with which the social imagination of modern people deals. The subject of meaning in the context of science and religion has been actively discussed in recent intellectual debates (initiated by, for example, “New Atheism” [Goodenough 1994; Dennett 1996; Ruse 2003; Baggini 2004; McGrath 2005; Attfield 2006; Haught 2006; Stewart-Williams 2010]); however this perspective is very unwillingly applied by empirical sociologists of religion.

Further, I will pay attention to phenomena occurring at the interface of the existential, the religious, and scientific inquiry. These phenomena without any doubt have their own local specificity and depend on the cultural context. I discuss them from a sociological point of view using material from Central Europe (Poland), a highly religious country that seems at the same time to belie the image of a homogeneously secularized Europe while also exhibiting some tendencies common to the rest of the pluralistic European societies.

By analyzing in-depth interviews with Polish physicists and biologists, selected by me as a group having daily contact with the fundamental natural

sciences, I show that science itself does not have a destructive effect on the understanding of meaning, including religious meaning. In the studied population, it is rather a reinforcing factor in the existing worldview system. I also demonstrate that the understanding of the meaning of the Universe and the meaning of one's own life is inscribed in a system of "allied" and interconnected metaphysical solutions. In the studied population, some of these solutions are the product of scientific thought.

AMALGAM CONCEPT OF MEANING

The debate about the meaning of the world and human being often rests on the basic question: what do we understand by meaning? In the sociological, psychological, and philosophical literature three main lines of reasoning on the subject can be distinguished. The first and the most characteristic for psychology emphasizes the aspect of experience; the experience of the meaning and fullness of life (Maddi 1970; Park and Folkman 1997; Mascaro and Rosen 2005; Steger and Frazier 2005; King et al. 2006). The second, which often appears not only in theoretical papers on sociology but also in opinion polls, emphasizes the correlation of meaning with the value system (what makes life worth living?) (Parsons and Shils 1951; Mariański 1990, 1996; CBOS 2004). The third draws attention to the regulating role of meanings that give life and knowledge integrity. This third aspect is well recognized by all the mentioned sciences; however, by referring to the sphere of ideas, it inevitably enters the territory of philosophy.

It is philosophical analysis that most clearly demonstrates the difficulty of determining what meaning is. As shown by some authors, the search for meaning is rarely subject to the rules of logic; therefore, attempts to create an exact definition of meaning may lead to a dead end. In the words of Ronald Hepburn, "life is not a statement, and cannot therefore have linguistic meaning" (1966, 126). In particular, as if contrary to the above-mentioned "psychological" and "sociological" paradigms, philosophical analysis reveals that the meaning of life cannot be reduced to its ethical value, or even to happiness (Wolf 2010). It is enough to recall a thought experiment by Robert Nozick: life in a virtual world created by a pleasure machine can be happy, but only a few would choose it because of its meaninglessness (1974, 42–45). When one talks of the "meaning of life," one may have in mind, according to some authors, choice-worthy, subjectively important purposes and values, qualities that are worthy of pride or admiration, conditions that render a life pleasant or intelligible; other authors notice instead that the narrative of meaning contains heterogeneous ideas and exhibits no unity (Czeżowski 1989; Bocheński 1993; Markus 2003; Thomson 2003; Mawson 2010; Baggini 2004).

In the face of these difficulties, inclusive perspectives which indicate that meaning is a complex phenomenon that includes several factors and ideas

seem convincing. Most clearly the inclusive approach, as it seems to me, is expressed in the concept, which I will call the *amalgam thesis* (Hepburn 1966; Metz 2007; Baggini 2004; Seachris 2009) and which I will use as a tool of analysis in this article. This approach interprets meaning as an amalgam. Hence, meaning is not a separate idea, but an alloy of several ideas and existential answers, which is why the question of meaning should be placed in a broader framework that integrates interconnected motives that are primarily existentially significant for humans. Thus, the central response of a human being to the meaning of life is determined by answers to related questions and integrated into a holistic narrative of the Universe: “to know the meaning of life is to know a true metaphysical narrative about human life in general that somehow makes sense of our lives In this sense, the meaning of life is a worldview or metaphysical view that shows the significance of our lives” (Thomson 2003, 132–33).

Only correlation with the overall picture of the world puts human life in a context in which it becomes significant. This is where one should localize those meaning-building ideas that a person derives from available scientific explanations of the world which are used to construct his own metaphysical narrative.

A FEW METHODOLOGICAL NOTES

I will try to show that the amalgam approach to meaning not only adequately reflects the meaning-forming processes that take place at the level of individual beliefs, but also explains why both religion and modern science take part in them. The researched population consists of 50 scientists (25 physicists and 25 biologists), affiliated in research institutes of the Polish Academy of Sciences (Institute of Physics, Institute of Biochemistry and Experimental Biology, Nicolaus Copernicus Astronomical Centre) and the two most reputable universities in Poland (Warsaw and Jagiellonian). The selection of sciences—physics and biology—is determined by their fundamental nature and historical influence on theological and philosophical discussion about the relation between science and religion. In-depth interviews were conducted with the scientists, touching upon their views on the relationship of religion and science, as well as a wide range of issues related to the theme of the supernatural. It was in this context that the question about the meaning of the Universe and human life was asked.

The following analysis uses several terms that require definition. Some of them (such as the soul, free will, or the supernatural) were subjects of the larger parts of the interviews. These terms were intentionally not determined by me in advance; I was instead interested what connotations were attached to them by the respondents. After the first open questions, several clarifying questions were usually asked to illuminate the respondent's view: “What about the soul? – The soul? . . . One can interpret this

concept differently; – I have no interpretation, I want to catch your idea” (19bU). Furthermore, I use these concepts in accordance with the more extensive comments of the respondents, which, however, I am not always able to quote completely.

Although in this article I discuss a group of Polish scientists, the study has a comparative character and includes fifty interviews with Ukrainian physicists and biologists, affiliated in the National Academy of Sciences of Ukraine. I refer to this material in order to illustrate some differences in the sociocultural construction of narratives about meaning. Quotations are provided with codes indicating interview numbers. I use “P” for physicists, “aP” for astrophysicists, “b” for biologists, and “U” for the Ukrainian scientists.

THE RELIGIOUS SITUATION IN POLAND

It might be useful to briefly describe the cultural and religious situation of Poland. According to Peter Berger, one of the best known proponents of the secularization theory (who admitted his own miscalculations in the face of empirical evidence), the theory proved relevant in two spheres: Western European and Western-style higher education. Sociologists often speak of the uniqueness of a secularized Europe as a whole compared to the rest of the religious world. Bearing that in mind, one can state that Poland is a distinct from the rest of Europe, “an exception from an exception” (Borowik 2010). Secularization processes are developing here slowly; the dominant religious denomination, the Roman Catholic Church, continues to enjoy a very strong position by participating in social and political life and being one of the main national identity markers. This coupling of religious and national identity has been reinforced historically. The Church was perceived as a defender of Polishness during the partition of Poland, when Poles lacked their own statehood. In more recent times, when after a brief period of independence the country fell into subjection to the Soviet Union, the Church participated in the resistance movement. Communist ideology, including scientific materialism, has never found a significant number of supporters in Poland and was viewed as an ideology of the invaders. Polish atheism, still minor, has other roots and is closer to the perspective of enlightened humanism (Tyrała 2014).

The dominance of Catholicism has not significantly declined since the fall of the Communist government in 1989. It is worth noting that the vast majority of Poles get a certain level of religious education in primary school, where the subject “religion” is taught, including knowledge about Catholic doctrine. Some studies show that Catholicism continues to be a very significant factor in family socialization, which however has a practical and unreflected character and focuses mainly on prayers and church attendance. According to the Polish sociologist Irena Borowik, “in

Poland being a religious Catholic is as obvious as brushing teeth, washing hands, having bread for breakfast. . . . At the same time—since an unthinking socialization for religion is predominant—religion is not questioned by reasoning or by theological, or quasi-theological, disputes. Doctrinal issues are of no interest to the Poles; they do not arouse disputes, nor do they form schools of thought” (2010, 269).

A large majority—ninety-two to ninety-seven percent—of Poles declare themselves as Catholic (CBOS 2015); however, there are some phenomena at the level of private worldviews that make sociologists speak about the growing privatization or deinstitutionalization of religion (Borowik and Doktor 2001; Mariański 2004; Boguszewski 2012). Increasing selectivity in approaches to the Catholic dogmas and/or Catholic moral principles (such as belief in God, yes; in the devil, no) can be observed. Eclectic “spiritual” or “New Age” beliefs are becoming more common mainly in the cities and among educated groups. Interestingly, these worldviews also include elements that refer to Catholicism (Hall 2007). This concealed privatization and selectivity of religious beliefs should be taken into consideration when we analyze the worldviews of scientists who declare affiliation to Catholicism.

SCIENTISTS AS A SOCIAL GROUP

Without any doubt, scientists constitute a very particular social group. International data show that the level of religious belief is lower among academics than the general population (for an overview, see Beit-Hallahmi 2015). The most extensive survey of Polish professors, carried out by Maria Libiszowska-Żółtkowska, found that 71.6 percent of scientists believe, compared to approximately ninety-six to ninety-seven percent in the general population. “It seems that it is reasonable to say that professors are the group with the highest rate of atheism in Polish society,” the sociologist says (2000, 83–84, 95). In my research, sixty percent of respondents believe in a supernatural reality, of which only ten percent did not associate themselves with Catholicism, and thirty-six percent identified themselves as nonbelievers. Ten percent of the believing non-Catholics can probably be classified as representing some version of spirituality if we define it in terms of faith in the supernatural. All of them, however, have no “strong” beliefs. They mention some “other religions” that could be more convincing than Catholicism and consider the possibility of some “energies” or “the afterlife.” Nonetheless, they talk about these ideas in an uncertain manner and do not try to look for a particular “other religion” or religious groups with similar views.

Sociological studies of religiosity among academics mostly aim to clarify whether it is science that affects their lower religiosity. The influence of scientific work on the religious and nonreligious construction of meaning

which I investigate in this article fits therefore into the broader sociological discussion. The phenomenon is generally interpreted within two paradigms: the first asserts the epistemological conflict between science and religion, whereas the second tries to find biographical, psychological, or social factors associated with science. In my interviews, both epistemological and biographic foundations of (non)belief among Polish scientists were discussed. I will occasionally refer to these data later in the article.

METAPHYSICAL NARRATIVE IN THE CONTEXT OF CULTURAL PLURALISM

Below, the narratives of the respondents about the meaning of life and the Universe will be investigated. It is important to trace the exact contexts in which Polish respondents wanted to talk about meaning even if my questions were not directly related to it. Since these contexts differed in the two studied populations, it can be assumed that to a large extent they were conditioned socially.

As follows from my analysis—in full accordance with the amalgam approach—reflections of Polish scientists on meaning were integrated in a number of related topics. It is significant that this was recognized by the respondents themselves who expressed the view that a satisfactory answer to the question of meaning requires the presence of a coherent picture of the world—a system of anthropological, ontological, and ethical explanations. At the same time, some respondents noted the lack of such a system, both in the Polish and global cultural space. Scientists who touched this topic saw the worldview of our times as lacking both an idea of how to solve existential problems and a satisfactory value system. This deprives the question about the meaning of life of solid reason or absolutely erases it from the agenda: “This is the first system in the history of mankind that does not offer a human being any existential or eschatological position” (nonbelieving doctor of astrophysics, af2).

The respondents saw their own position as an alternative to the picture of the world offered by mass society, arising from independent experience, including scientific thinking. This aspect of a personal worldview choice was particularly highlighted by nonbelieving scientists. Faced with a lack of a cultural answer to the question about the meaning of the world and human being, the dominant institutional religion, with its system of traditional explanation, was considered insufficient by them. The plurality of religions, which many scientists first encounter in foreign scientific training, relativizes their religious picture of the world and makes it less convincing. All the aforementioned confirms the sociological diagnosis: despite the presence in Poland of a dominant religion, Polish scientists feel part of a pluralistic culture in which they are responsible for building a worldview from the available palette of ideas, including the scientific.

AMALGAM THEME 1: FAITH AND REASON

In an effort to single out the key structures in the amalgam narrative on meaning, we should pay attention to the specific religious and nonreligious configurations that are typical of Polish scientists. These configurations refer implicitly or explicitly to the Catholic theological tradition. In contrast, in the Ukrainian group I found significantly less configurations of that kind.

It is worth considering whether all the topics mentioned by the respondents in the context of meaning are equally important for structuring the narrative, or whether some of them play a more fundamental role. Although the term “amalgam” itself suggests that it is a combination of different elements, there is some evidence in favor of the latter. I suppose that for Polish scientists, one of the “axial” topics is the definition of reliable knowledge. Next to the epistemological question *Is it possible to accept any statement without proof?* there is an ethical one: *Is it moral to take anything on faith?*

Nonbelieving scientists tend to respond to both these questions negatively. Adequate knowledge is seen as subject to verification on the basis of repeatable empirical experience or orderly logical arguments. Some of my respondents talked about the need for such knowledge as their original intellectual disposition, which at some point became crucial: “This is how my brain cells are trained, I just can’t think differently” (nonbelieving professor of astrophysics who lost his faith at the age of fourteen, af10). The rational-empirical, corresponding to a scientific methodology approach to the truth, has an expressed ethical coloring: belief without evidence is at best perceived as childish credulity, at worst as self-deception. Their own position is often experienced as an enlightened “adulthood”: “It’s too easy an answer,” “children in kindergarten can succumb to such illusions” (nonbelieving biology professor, b4).

The arguments of the nonbelievers are usually of an agnostic nature: absolute meaning (like God) is not something that does not exist, but as something unprovable it cannot be taken into account. This fundamental challenge leads to the end of the search: “What would give [the Universe] meaning? . . . I have put a cross on this. Here I am approaching my agnostic position: I am not saying that it makes no sense, but it cannot be determined” (nonbelieving professor of astrophysics, af12).

The same theme in the narratives of the believing scholars is emphasized differently. To reflections on faith and reason is added the question: *How important is exact knowledge personally for me?* Believing respondents answered positively to the question about the ethics of accepting some judgments without proof. Not only can one in such a way accept statements on the absolute, religious meaning of the world and human life, but one should do so because they correspond to the personal experience of the meaningfulness of existence: “A world in which there is God, as I feel it,

is full of meaning and beauty. And I am not going to refuse it" (believing doctor of biology, b16). Many religious scholars value this experience of faith, and reflections on its practical benefits, incomparably more highly than rational arguments.

It can be observed that in the statements of the believing respondents there is a dimension of personal, inner experience which we do not find in nonbelievers. Although believers are empirics in their own way, they do not approach this experience with scientific tools. In contrast to the nonbelievers, believers adopt a dual concept of the truth: the "worldly," available to science, and the "heavenly," which is not subject to verification of the human mind, but is more fundamental. This second truth is subjectively more important than the first: "It is more important to me than . . . the rational explanation of the world. If you speak in the language of physics, the timeline has been here much longer" (believing professor of astrophysics, af19). However, among the believing scientists there are also those who felt the need to think through the rational basis of their faith very seriously.

It might be worth noting that reliable knowledge is less significant among the Ukrainian group. These scientists rarely speak about the unreliable character of faith; instead, they stress their negative opinions about the Ukrainian Orthodox Church. The nonbelieving professors belonging to the older generation internalized secularism in their youth during the Soviet atheist regime. A religious need has never awakened in them, in spite of the religious awakening of Ukrainian society in general after the fall of the Soviet Union. The theme organizing the "religious" (in the broadest sense, including forms of spirituality) narratives of the Ukrainian scientists is, I suppose, a Mystery, denied in Soviet times but discovered by them in the Universe and everyday life now. Quite often this Mystery is described in terms of science (as harmony and complexity of nature, "strangeness" of quantum effects, and so on) and interpreted in a mystical way. Therefore, their beliefs do not need any rational justification because they are already proven and often even derived directly from the facts of science. In some cases, it is the believing scientists who comment on the rational approach to faith. "What I believe in, well, I have come to it through logical and scientific analysis. But by no means is it a blind faith" (believing professor of biology, 11bU).

AMALGAM THEME 2: THE IMAGE OF THE UNIVERSE

The adoption of the epistemic and existential decision on faith in the Polish group seems to determine a subjective view of the meaning of nature: "I do not say that I can rationally prove that there was any reason [for the Universe], I know that this is not necessarily so. But I choose this version, choose that there was a reason and everything did not appear by

accident” (believing professor of astrophysics, af13). This personal interpretation of nature, based on the conscious choice of a “point of view,” often becomes an element of narratives on meaning that is further based on less precise categories, such as images and their emotional evaluations. The issues underlying these reflections can be formulated as the following: *What does the world “tell” me about meaning? What place does a person take in this world?*

The Universe becomes for scientists a source of radically different experiences. On the one hand, the image of infinite space can cause a strong emotional reaction. The Universe seems to be alien, dehumanized, and hence devoid of meaning with only a human dimension, and the human himself seems a grain of sand against this background (Smith 2007). In this case, the image of the Universe confirms its meaninglessness and fits into the nonreligious paradigm.² On the other hand, the Universe can be perceived through a prism of harmony and beauty. Although such experience is typical also for nonbelieving scientists, believers only interpret it as proof of the meaningfulness of the Universe.

Thus, the religious and nonreligious perspectives form opposing interpretations of the same scientific motive. For example, such motives as the infinite nature of the Universe and the “marginalization” of life in it, the “mystery,” grandeur, and mathematicity of nature, could indicate an absolute meaning, or lack thereof:

- (a) “When you look at all this terrible mess, at the colliding galaxies, exploding stars, gamma-ray bursts and so on, it is difficult not to ask the question: but what is, in fact, the meaning of all this? This is the first, the principal, and the second is: what am I doing here?” (professor of astrophysics, nonbeliever who denies any absolute meaning, af12). “When I look at the world . . . well, it’s something amazing. The fact that the Universe is knowable by such small creatures like us, who are crowded on such a fragment orbiting a provincial star in a galaxy. . . . This is the logic of the Universe. For me this is a sign that there must be some deeper thought” (professor of astrophysics believing and affirming the meaningfulness of the Universe, af10).
- (b) “The world does not have any purpose, but there is a mystery. . . . I am fascinated by what I can see” (nonbelieving biology professor, b4); “I understand the mystery with a capital “M,” it fascinates me!” (believing professor of physics, f19).
- (c) “The existence of the laws of physics, beautiful, simple, and elegant . . . is a striking fact . . . [which] can by no means be justified on the basis of the Universe itself” (believing professor of physics, f5). “Mathematics exists only in our mind . . . the world does not have any deeper meaning than that it just exists” (nonbelieving professor of physics, f23).

As I have mentioned, in the Ukrainian group the image of the Universe is a primary factor that inclines scientists to reflect on the mysterious dimensions of the world; however, these reflections are hardly ever associated with the question of the meaning of life and the Universe.

AMALGAM THEME 3: HUMAN AUTONOMY, THE SOUL, LIFE AFTER DEATH

The study of nature shapes the social imagination of scientists in a special way. However, understanding nature also gives rise to proto-philosophical ideas. One of the important topics for Polish scientists is determinism and randomness in nature, as well as the freedom of a human's will. The question that in the most general formulation can be represented as *To what extent is the essence of a human covered by the laws of nature and does a person preserve his autonomy in relation to them?* has referred to philosophical disputes since the emergence of science. This topic repeatedly encouraged respondents to talk about the meaning of life.

One can point out a distinct tendency: meaning is experienced by scientists as something that goes beyond natural necessity. It is the sovereign control over life that adds meaning to it. Meaning, therefore, is associated with the approval of human autonomy in relation to nature, while a world in which everything is reduced to the natural laws turns out to be meaningless:

"A world in which everything is determined, the laws are known . . . [in it] and there is no free will, we behave as we do because we are forced to. Because the particles in our body are organized in such a way. . . . Why does it exist? Well, it exists, because it exists. . . . This is an image of the world which is simply appalling to me. . . . But this is not consistent with modern physics" (a believing professor of physics, Catholic, f5).

In other narratives, lack of determination is not associated with autonomy of will, but rather with the effect of the unpredictability of the future, which makes life more interesting: "the meaning of existence, the purpose of human activity . . . can be mathematically expressed using the optimization criteria. If we agree with the fact that I am a survival machine who lives to multiply my genes, then, from that moment, my life becomes easier, I know what to do. But on the other hand, if all the purposes were well defined, then life would be completely flat and boring" (a nonbelieving professor of physics and computer science, f21). In such cases, some scientists preferred to abandon the "big" word "meaning," replacing it with zest for life, curiosity, or pleasure: "I do not know what the meaning of life is. Life is a series of events that are largely uncontrolled accidents . . . , life is based on chance, but chance makes it more interesting" (a believing biology professor, b11).

It is noteworthy that although both believers and nonbelievers consider exclusion from a “deterministic” dependence on nature as a condition of the meaningfulness of life, they use the term “meaning” in two different ways. Scientists clearly distinguish the dimensions of meaning: “big” (“transcendent,” “metaphysical”) and “small” (“earthly,” “practical,” “everyday”). For Polish scientists, it is typical to understand the “big” meaning in absolute and often explicitly theistic categories as something rooted in the ontological fundamentals of the world and determined by something (in the studied group more often: Someone) superior to humans. Both believing and nonbelieving respondents put it similarly: “I do not know what the meaning of life is because I don’t believe that Someone has defined this meaning for us, I don’t believe in God,” says a nonbelieving professor of astrophysics, who then moves on to the “small” meaning: “So I think that we define this meaning for ourselves, one has to find it to feel better” (af9). “[We need God] because we are concerned with the futility of our daily efforts, the meaninglessness of human existence. . . . the meaning to all this was given by . . . something within the boundaries of the Absolute” (a professor of biology experiencing a faith crisis, b14).

It is clearly seen that the amalgam narrative about determination and meaning in the group of Polish scientists is related to a range of not only ontological but also anthropological problems. Naturalistic reductionism in the understanding of human being inevitably raises Kant’s question of the subjectivity of the human mind which has become the object of scientific description. The question *Can the human mind be reduced to what can be described by science?* is often mentioned in the context of meaning and brings Polish respondents to the other question *Do humans have a soul?* Both topics were often addressed spontaneously; if this did not happen I touched on them in the part of the interview specially designed to clarify the exact connotations of the “soul” and related terms (such as “consciousness,” “brain,” “body,” “matter”) and to elucidate their place in the respondent’s worldview. Most often the question of the soul was understood in the group of Polish scientists directly as the question of its immortality. It was put in this way by both believing and nonbelieving respondents: “The existence of the soul, it is a matter of faith. I believe in an immortal soul. As it is said in the prayer: immortal soul, resurrection, and so on” (believing professor of astrophysics, af13). “What is soul? This is a matter of definition . . . , but I believe that there is nothing after death” (nonbelieving professor of biology, b19). Thus, for the Polish scientists the problem of the soul is linked with an adjacent problem: *Is there life after death?*

In general, three stable configurations of reflections on the aforementioned issues can be distinguished. The “big” meaning of life and the world is rejected by scholars who (1) from the position of naturalistic reductionism (human being is entirely described by the laws of nature) reject the autonomy of the human as well; (2) despite their reductionism, retain

autonomy for the human and explain it on the basis of the indeterminacy of the subatomic world, lack of scientific knowledge, or simply the experience of introspection. Both groups can be attributed to the nonreligious paradigm. “Big” meaning, as determined in an eschatological perspective (for instance, such as spiritual growth or work that advances the salvation of the soul, performance of one’s vocation on Earth), is mentioned by (3) an easily recognizable religious group: scientists who admit the autonomous aspect of the human and immortal soul as an extra natural component of the Universe. This reveals the stability of the nonreligious and religious narratives of meaning among the Polish scientists. Furthermore, the typical religious narrative corresponds quite accurately with Catholic doctrine, which states that God created the human in His own image, giving him an immortal soul, free will, and outlining his purpose in life.

It can be assumed that in cultures with other religious and social backgrounds, religious meaning narratives might be structured differently. For example, Buddhism recognizes a sort of absolute purpose in life but does not connect it with the Absolute. Buddhist texts, instead of discussing the metaphysical questions of free will and determinism in nature, are instead interested in practical aspects of will and ways to achieve freedom through wise decisions (B. Alan Wallace 2011). For comparison, the key points are highlighted differently by the Ukrainian religious respondents. First of all, the evident lack of a connection between the question of meaning and the topics that appear in the Polish narratives (such as the Absolute, soul and its immortality, or free will) deserves attention. Although God’s existence is very important for Ukrainian scientists and they pay a great deal of attention to it, the topic of free will is not simply irrelevant, but sometimes just unclear, particularly when it is placed in a context of nature, determinism, or the meaning of life. In general, meaning is rarely understood as “big” even by respondents who believe in the Absolute. Ukrainian scientists talk about “small” goals such as raising children, self-realization, or valuable scientific results. Such specificity may refer to the “this-worldly oriented consciousness,” as Russian sociologist Lev Gudkov calls it, which he considers typical for the post-Soviet space. Gudkov says that in Soviet and post-Soviet societies, people focus on the current circumstances of their everyday life and their consciousness is limited to actual reality. According to Gudkov, this phenomenon is not only a consequence of the depreciation of the value of human life under the Soviet regime, but also a lack of social institutions that could provide life with meaning. These observations are based on surveys conducted in Russia, but if Gudkov’s assumption on the general post-Soviet nature of these tendencies is correct, it might be interesting to note that, according to his data, worldly thinking is paradoxically most typical for the educated segments of the population (Gudkov 2008). However, it is evident that worldly thinking can explain the views of only some of the respondents, given

that Ukrainian scientists, in general, think quite seriously about ultimate questions.

“SMALL,” HEDONISTIC, AND ALTRUISTIC MEANINGS

While the value of “small” meanings is recognized by believing scholars, nonbelievers mostly develop a subjective narrative about them: “Il faut cultiver notre jardin. . . . Here is the answer of how to live and why to live. Every morning brush your teeth, do some exercise, take the children to kindergarten, go to work,” [because] “we can do anything, but we know how it all ends” (nonbelieving doctor of astrophysics, af12). In this narrative the answer to moral questions is the key: *Is it moral to live for one’s own pleasure? Does a human being have responsibilities to others?*

One can clearly distinguish two main groups of “small” meanings: hedonistic and social. Both appear in the same worldview so scientists usually respond positively to both questions: a person must live for himself while being useful to others. “Small” meanings are typically justified by data from evolutionary psychology, sociobiology, and other sciences.

Hedonic meanings are explained on the basis of the need to meet human needs, augmentation of its vital forces, self-realization, delight, or happiness. They are close to the psychological understanding of meaning as a feeling of fullness of life: “It answers the question about meaning. . . . We are very complex organisms with a complex nervous system which requires very different complex stimuli. That is why what brings us joy and satisfaction comes in many forms including love, family, work for the benefit of society, education, science, creativity, and appreciation of art and culture” (nonbelieving biology professor, bf4).

In turn, *social meanings* are based on the necessity of providing help to people, completion of things important for them (in particular, scientific), and education of children: “The meaning here is to do something in this life, and it seems to me that I have done something in life. . . . If there remains something after a human—this is good. At least some publications. . . . And in personal relationships—if there are children, there is also certain meaning in this” (believing professor of physics, not a Catholic, f20).

UNFINISHED NARRATIVES

Along with typical holistic religious and nonreligious worldviews (I skip here several less representative ones) there are narratives that can be called *unfinished*. Such respondents have not yet taken a worldview solution in a particular field or the taken solutions are not compatible with each other. Here we encounter eroded religious (Catholic) narratives, incoherent fragments of nonreligious narratives, and unstable dynamic worldviews often characterized by dramatic searches. Since I cannot afford

a detailed analysis of all these very different cases, below I discuss three selected examples and focus on the role of the scientific content in them.

- (a) The main subject of a professor of biology's search (b14) becomes the experience of faith. She is "not one of those who merited this grace" and therefore is doomed to the data of reason, where, in the absence of a religious decision, her understanding of truth approaches the scientific one. She "does not have hope" that there is life after death, is inclined to think that evidence from the underworld (like visits from dead relatives) is explained by neuroscience data (they are "generated by our brain"), and states that neuroscience is "looking for the soul" in the limbic system. This biologist emphasizes the insignificant place of a human being in a world ruled by "necessity or chance, as you wish." Nevertheless, her reflections on meaning cannot be assigned to a nonreligious paradigm. As if throwing away all rational arguments, this scientist is seeking religious experience: "I would like to surrender to such a trusting, boundless, childlike faith" but "in me there is no such fire that would burn always." She searches exactly for the Absolute, and small meanings do not satisfy her: "the point is that the meaning to all this was given by something greater than ambition and the daily bustle, or something within the boundaries of the Absolute. Then it would have been easier for me to put up with this everyday life and its finiteness."
- (b) A scientist who considers himself a Catholic (b11) is partly inclined to the scientific concept of truth, refusing, as he himself confesses, to believe in some of the dogmas of the Church, which, in his view, are not consistent with scientific discoveries. He doubts the divinity of Christ and does not recognize the Christian concept of free will, or the Christian purpose of life as salvation. He constantly feels a lack of conviction: "At every stage of my development, the development of my awareness, my knowledge, these questions about meaning and its accordance with certain conditions, which the Catholic faith imposes on me, . . . those doubts have always been present." On the one hand, he believes in the soul as an "immaterial entity," which "is not subject to the laws of physics and biology." On the other, he often reflects on the "behavior" of his own soul, as well as of other living beings in the natural world, on their tremendous "one hundred percent dependence" on the laws of biology, the environment, and adaptation. These reflections lead him to the paradoxical conclusion that "life . . . is a row of certain events that are by and large uncontrollable accidents . . . that is why it is difficult for me to say what meaning is. This is exactly a view approaching determinism. I think that much results from chance, over which we have no influence." He admits that such an idea of the soul is not consistent with the Catholic outlook.

The narrative of this scientist contains dramatic episodes indicating an ongoing religious search. Although he keeps praying, heaven is “silent all the time,” which is a “difficult” experience for him. He claims, “faith comes to a scientist with difficulty” because there are “inherent contradictions” between science and religion. He perceives himself as a person who is experiencing a never ending crisis of faith (“this crisis continues all the time”) and discusses it with Catholic priests. He has doubts whether he is still a Catholic, but he wishes he were. Thus, we are dealing with a disturbed Catholic narrative: rejection of the Christian concept of meaning and freedom of will and an incoherent religious concept of the soul that is both determined and nondetermined by nature. It must be noted that the scientific content here is damaging in relation to the religious worldview role.

- (c) A confident nonbelieving professor of astrophysics (af9) rejects unprovable truths such as God, absolute meaning, the soul, and life after death. She used to be a truly believing Catholic in her youth, but in high school, when she “studied physics and all these physical laws,” her faith faded. It is “difficult, very difficult” for her to live without knowing what she is living for, to understand that “human being is an unplanned event, in a way.” There is, however, something that surprises her: “a kind of force that pushes us to action,” “something that says even to an agnostic or an atheist to get up and do something.” She mentions this force in the context of meaning: “there are some moments that give the feeling of happiness. Here we come back to this force . . . because of which we want to live, though the meaning is not visible.” This respondent insists that she does not believe in any supernatural reality, she calls herself a “nonbeliever” and tries to explain the force naturalistically: “maybe it is just a force of nature.” However, her tone is full of wonder at how strange this force is. She expresses a deep doubt about possible explanations for the force and keeps repeating: “I am not sure”; “I have no answer.” She then considers it the function of our brain, and another time she hesitates: “Why has this mechanism been developed?” In the end, she adds unexpectedly, “this is exactly where I see room for the supernatural.” This is the only time that she uses this alien and unconvincing, as she made clear earlier, term. She speaks now in a rather interrogative manner, which makes one think that the question of extranatural reality, despite her declaration, has not been resolved completely.

CONCLUSIONS

I have examined several interrelated contexts that contain the subject of meaning. On the basis of this I will try to formulate some conclusions

about the meaning-making processes at the interface of science and religion among the respondent group of Polish physicists and biologists.

First of all, I showed that the theme of the meaning of life and the Universe is inscribed in a series of related topics that corresponds to the “amalgam” concept of meaning. In the studied population, these topics touched on the following questions: *Is it possible to accept any statement without proof? Is it moral to take anything on faith? How important is exact verified knowledge for me personally? What does the researched Universe “tell” me about meaning? What place does a person occupy in this world? To what extent is the essence of a human being reduced to the laws of nature? Does a human being preserve his autonomy in relation to them? Does a human have soul? Is there life after death? Does a human have responsibilities to others? Is it moral to live for your own pleasure?* The majority of answers to these questions are associated with natural science topics and thoughts about the Universe, but some are axial inasmuch as they seem to arrange the others. This axial question among Polish scientists concerns the nature of verifiable knowledge which allows one to accept or reject the Absolute, the absolute meaning of life, the soul, or life after death, all of which had the same epistemological status for the respondents.

The solution of the epistemological problem influenced the religious and nonreligious narrative on meaning, while the religious and nonreligious configurations of the metaphysical narratives proved to have persistent properties among the respondents. Thus, the typical Catholic scientist mainly recognized the absolute meaning of the world and human existence, seeing it in eschatological and religious categories: he believed that there is knowledge inaccessible for rational–empirical verification; he saw meaning in the beauty and harmony of the world and autonomy in the actions of the human. The typical nonreligious scientist denied absolute meaning for agnostic reasons and gave priority to “small” hedonistic and social meanings. Significant for him was rationally and empirically grounded knowledge. The beauty of the world and a human’s free will, if it were recognized, would not be interpreted in terms of absolute meaning. His understanding of the meaningfulness of his life is based on hedonistic and social values and is often explained by the facts of science.

One can further conclude that Polish society contains the distinctive features of a modern pluralistic culture with its plural “truth,” but also continues to preserve the Catholic system of meanings that proved to be vital for most scientists. This generally reflects a state of society in which “religiously indifferent people are few” and “religiosity, including in its privatized form, . . . is somehow legitimized by traditional reference to Catholic membership” (Borowik 2010, 283). However, it is significant that while the Catholic scientists are inclined to accept Catholic doctrine in its entirety and demonstrate worldviews that are quite consistent with Catholic teaching, its adaptation is linked to efforts to coordinate

religious provisions with individual reflections, including those on scientific topics. Nonbelieving scientists also make efforts to design their own worldview and use scientific content to an equal extent. Thus, reflections of scientists on meaning are connected with meaning-making work aimed at finding answers to related questions. Such an individual effort to build a satisfactory picture of the world is typical of late modern society.

It should be remembered that, although from a philosophical point of view metaphysical narrations must meet the requirements of consistency, this is not necessarily true in the case of real worldviews approached with sociological tools. As has been observed many times (Mannheim 1952; Kotarbiński 1957), human worldviews are rarely fully integral and logically impeccable, but they are without any doubt socially and culturally predisposed. To illustrate this, I tried to show some differences in constructing narrative about meaning among Ukrainian scientists. The element that unites their religious narratives is, as I suggested, the idea of the Mystery of the world. The question of the rational justification of faith is raised by the Ukrainians rarely, and almost never associated with the meaning of life and the Universe. The moral aspect of taking anything without proof is not problematized. Moreover, these respondents seem to distance themselves from the idea of faith-based immorality, most likely because this was discredited in the period of communism. Without attempting to reconstruct here the amalgam narratives of the Ukrainian respondents, I intended to show that patterns natural for a populace with a stable cultural situation and a strong dominant religion are not so obvious for a society that has survived ideological revolution.

Several factors may be responsible for this. In contrast to the Polish respondents, the Ukrainian scientists did not experience the challenge of religion imposed by family, school, and society. When, after the collapse of the Soviet Union, many of my Ukrainian respondents began their religious quest, the post-atheist Ukraine in fact lacked a dominant religious context. The reviving Orthodoxy put no considerable ideological pressure on society because it was perceived as just one of many choices on the pluralistic religious market. In addition, familiarity with Orthodox doctrine in Ukrainian society was rather poor. In Ukraine, debates about science and religion are almost entirely absent in the public sphere. In contrast, in Poland—due in particular to the activities of the Copernicus Centre and Templeton Prize winner, cosmologist, philosopher, and Catholic priest Michał Heller—society is familiar with this topic and the related philosophical language of debate. Polish respondents willingly used the language of philosophy and felt quite comfortable with such topics as, for example, determinism or free will.

The Ukrainian scientists thereby began their religious search “from scratch.” They came to faith in their adulthood when they were already

engaged in science and often drew their inspirations from unexpected sources, including science itself. As a result, instead of the stable configurations of the Polish religious and nonreligious amalgams which refer to the Catholic background and philosophical discussions on science–religion relations, one can see a wide range of syncretic, “bricolage” systems that lack a traditional religious paradigm.

Certain generalizations can be made about the secularizing impact of scientific activity on the worldview of the Polish scientists. We have seen that scientific content can be a basis for opposite theses in religious and nonreligious narratives on meaning. Its role probably depends on the amalgam configuration in which it is embedded. This indicates that science does not itself have a secularizing effect on the Polish scientists, but rather enhances the effect of other factors.

We can assume that the key amalgam decisions were mainly made by the respondents prior to their scientific activity. As follows from the biographical part of the interviews, most of my Polish respondents succumbed to religious socialization in childhood. This point is consistent with the other data, according to which 77.5 percent of Polish scientists were brought up in religious families, 15.4 percent in “mixed” ones, and only 7.1 percent in atheistic families (Libiszowska-Żółtkowska 2000, 101). Among my nonbelieving respondents, the lack of reliable justification is the major factor of their loss of faith. Libiszowska-Żółtkowska comes to a similar conclusion when she notes that for nonbelieving Polish scientists “the aspect of intellectual perceptions of the world is more important than others” (2000, 117). The need for “evidence” was usually clarified gradually in opposition with the existing religious discourse and was finally formulated in the last years of primary school or in high school, which was accompanied by a rejection of faith. In turn, for the majority of believing scientists the “evidence” was not so significant, and, often without any serious crises of faith, they confirmed the ideas offered them by the dominant religion: “[My faith] was greatly impacted by the family tradition. And since I didn’t find any contradictions, I stayed with it” (a believing professor of physics, f1). Only in a few cases were serious crises induced by a search for rational evidence of religion.

Finally, attention should be paid to the special cases of “unfinished narratives” about meaning in which a blurring of religious and nonreligious paradigms can be observed. I assume that these cases are linked to the inconclusive nature of the response to some related questions or adoption of conflicting answers (such as determined or nondetermined by the laws of nature, the human soul, or the natural and supernatural character of the “force” that makes a human act). Such worldviews among Polish scientists are often characterized by instability, dynamism, and existential stress. Respondents confess that their views are “difficult” for them; they wish they could find meaning, but they cannot, they make unsuccessful attempts to

deepen their Catholic faith, turn to God, but do not get any response from Heaven. In these cases, science is also a reinforcing factor, supplying data which had to be understood and multiplying the respondent's doubts.

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