THE BIOCOSMOLOGICAL IMPERATIVE

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"The guiding rule for our actions may be the Bioethical Demand: Respect every Living Being on principle as an end in itself and treat it, if possible, as such!"
Fritz Jahr, 1927

1. The Integrative Dimension of the Bioethical Imperative

The Bioethical Imperative as a term, an academic discipline and as a virtue and principle was coined by Fritz Jahr, a Protestant pastor and teacher in Halle an der Saale, 1927 in the annual editorial of the leading German language science journal *Kosmos*. Influenced by Buddhist and Hindu thought via Schopenhauer and by Wilhelm Wundt's empirical comparative studies in physiology and psychology of plants, animals and humans, he formulated the Bioethical Imperative "*Respect every living being on principle as an end in itself and treat it, if possible, as such*" (Jahr, 2012a). In presenting a new Imperative for moral orientation and action, he deliberately and expressively criticized Immanuel Kant's Categorical Imperative, which had called for the exclusive recognition of fellow humans as ends in themselves: "The moral law is sacred (inviolable). The person is not sacred, but humankind in his person must be recognized as sacred. Everything in the entire creation, if one wants and has power over it, can be used as a means only; only the human person and with it every intelligent being *is an end in himself*. He is the subject of the moral law, which is sacred, based on the autonomy of his will" (Kant: A156). For Jahr the "*sanctity of life*" is the foundation of the 1927 Bioethical Imperative, while for Kant the "sanctity of the moral law" is the foundation of the 1788 Categorical Imperative. Modern quantum mechanics and our new and growing understanding of the multiworlds of living proteins, cells, plant, animals, environments and symbiosis gives us even deeper insights into the multitude of life forms and life interactions.

The Bioethical Imperative changes the primary focus of European philosophy and ethics since the Age of Enlightment away from an anthropocentric focus towards a cosmocentric vision and strategy. Such a necessary change was influenced in the midst of the 19th century by translations of classical Asian literature into German and English and by new scientific knowledge of similar neuronal, psychological, and physiological reactions in plants, animals and plants. Jahr also was aware of the interdependence of forms of life, habitats, struggle for life, good life, and survival (Jahr, 2012b); he thus called for balancing values, visions, and interests among living beings. Jahr could not have known that modern quantum physics and most recent knowledge in cell, plant and animal biology would have strongly supported his vision of an integrative ethics of life (Frank, 2011; Barrow, 2011; Carr, 2007). Most diverse

forms of life have to eat and breathe, live together, share the environment, survive and enjoy life and living. Thus the former formal rigorist ethics of Kant becomes situational, content-rich and integrative in vision and action.

The most basic moral intuitions for the Bioethical Imperative are compassion and solidarity, living together in interaction, integration, and harmony. Jahr strongly supports legal protection of animals and rare species of plants and animals; he also voices concern about breaking plants and flowers just for fun and without a civilized and morally justified purpose. In regard to eating animal protein, he observes that in colder climates people eat animal protein, but they should raise and slaughter animals in a respectful way. He explains the interaction of egoism and altruism also for social policy: "For example, what is spend on social welfare and in support and improvement of national competitiveness, comes back with interest income, since the state and the economy have a greatest interest to have trustworthy public servants, good workers, financially well to do consumers, good development of the youth, in general the wellbeing of the entire nation" (Jahr, 2012c).

2. The Earth as a Living Being

Cosmos and earth are not just physical preconditions for life and living environments on this globe. Cosmos and earth are living entities themselves. Sakyo Komatsu, influenced by the great earthquake of 1923 on Honshu Island which resulted in over 140.000 death and severe destructions in Yokohama and Tokyo, wrote a thrilling novel "Japan sinks" (Komatsu, 1976). Onodera, the major figure in this thriller asks his wife while escaping by ship: Can you see Japan? No, she answers. It must have sunk. Can you see smoke? he asks. No, she answers, I cannot see anything. Since March 11, 2011, we have experienced in Japan that the earth as a living entity, mostly friendly and supportive, sometimes wild, extremely wild, inhuman, cruel killing is real, not just the material for a thriller story.

The earth is dark at night and light during the day, cold in the winter and warm in the summer. Some areas such as deserts or the poles are hostile and not supportive of most forms of life; other zones are full of life and living environments of mutual support, fight for life, cooperation and consumption. Climate changes are occurring over decades and centuries and millennia. We seem to be in a long term warming period; there were warmer periods in Europe in the early 19th century, colder times during the Protestant reformation in the 16th century. We had ice ages and ten thousands of years of hot tropical conditions in Europe. Elephants were roaming where there is permafrost in Siberia now; coal deposits in Europe and North America remind us of millions of years of tropical plant life in these areas during earlier life ages of the earth.

The Bioethics Imperative translates scientific knowledge about life and life cycles into behavioral and attitudinal moral and cultural responses, i.e. into respect and compassion and solidarity with other forms of life. This includes, of course, the Kantian position, respecting fellow humans and sentient and (hopefully) responsible beings. But Jahr goes far beyond those limits of inter-human morality. The recognition of nature and earth as a living being calls for moral protection and

cultivation primarily. But recognizing the living nature of plants, animals, environments and the globe itself also calls for accepting naturalness where it cannot be changed. Do we want to ride wild tigers? Do we want to build houses on sand? Do we want to hike lightly closed in icy weather? Do we want to produce enormous and dangerous amounts of alpha, beta and gamma radiation which we might not be able to fully control: radiation of iodine 131 with a half-life period of 8 days, cesium 137 with 30 years and plutonium 239 with 24.390 years? Do we want to venture leisurely into unknown jungle territories or unsafe and unknown social environments? Do we want to grow cultivated crops in unsupportive soil or climate? Do we want to build nuclear reactors on geological fault lines? Do we want to produce pollution, which the globe cannot handle, which will make us sick and the environment suffer? Do we want to build megacities, which during biological or other emergencies we will not be able to be kept alive and livable?

It is in recognition and respect to the living powers of the earth, that we will not be able to change the seasons of the year or a global warming or cooling over decades or centuries or millennia, if this is the fate and life cycle of the living earth. However, we can change the pollution levels of our cars, avoid the construction of genetically modified plants and animals which might do harm to our health and the health and harmony of the environment; we are challenged to do it for the protection and cultivation of livable natural, social, and cultivated environments. As bioethics per se is integrative, we might add another field of bioethics not yet seen by Jahr and others: geo-ethics or earth-ethics. A geoethical version of a content-rich Bioethical Imperative, i.e. the Geoethical Imperative in the Kantian tradition would read: "*Respect mother earth with all her forms of life, whether natural or man-made, basically as goals in themselves and treat them, if possible, as such*."

Philosophical and religious traditions of various cultures go even further and interpret the three-plus-one dimensions of our visible universe in multiverse perspective. Stars, fish, insects, babies and the double helix of DNA are visible entities in our three-plus-one world continuum, but there is more. The Bible is filled with invisible worlds, powers and dimensions: 'In the beginning God created the heavens and the earth' (Gen 1); the term 'ha'shamaim' for Heaven is a plural form, ha'arez for Earth is singular, Luther translates both in the singular 'Himmel und Erde', but the King James version uses the plural. The bible continues to only outline the creation of the visible physical world, but recognizes those other worlds as demonstrated in Lucifer talking to Eve in Paradise; also the recognized active role of angels, good and bad spirits, and other invisible powers presuppose multiworlds. Early medieval Islam commentaries ask whether it would better to talk about 'worlds' in plural, as written in the Qur'an 'all praise belongs to God, Lord of the Worlds'. Arab oral and written narratives describe seven heavens, the third full of innumerable angels having seventy heads each with seventy tongues in each head, the fourth with angels knowing and teaching math, biology and other sciences, the fifth full of gold. Habibi in the recent novel by Craig Thompson meanders easily between various worlds seen and unseen bringing Jewish, Christian and Muslim traditions into the 21th century (Thompson, 2011).

Similarly detailed is the concept of multiverse in Hindu tradition: 'Because You are unlimited, neither the lords of heaven nor even You Yourself can ever reach the end of Your glories. The countless universes, each enveloped in its shell, are compelled by the wheel of time to wander within You, particles of dust blowing in the sky' (Bhagavata Purana 10.87.41). Hindu cosmology discusses an infinite cycle of births and deaths and an infinite number of universes with each cycle lasting 8.4 billion years. The worlds came out of a dream of Vishnu, who in avatars such as fish, boar, or turtle, involves himself in endless tasks of protecting and saving and in other cosmic actions. The Bhagavata Purana mentions twenty-four different avatars, incarnations or manifestations of Vishnu, but at other places it suggests that the number of his avatars is innumerable. Here is a related Hindu Q&A narrative: 'Where is the world situated? On the back of an elephant! Where is the elephant standing on? On the back of turtle!' If this turtle is just another avatar of Vishnu, than the Vishnu dream story is quite elegant and more in line with quantum physics than other deficient big bang urknall models, which still leave the question unanswered: from what and from where and why at all did the big bang happen?

The Mandeans, followers of John the Baptist then and today, believe that our souls come from a supreme dimension of Light into our bodies and into this world of darkness. Since the times of Jesus and John, and still today they transcend this three-plus-one dimensional world by longing into the dimension of supreme and divine Light and getting recharged for continued battle against the powers of darkness in those moments of frequent and repeated baptism in running water. They believe in a four-piece multiverse, two celestial or spiritual ones and two earthly ones. One of the spiritual worlds sometimes – but not in all books – is understood as non-eternal and an ante-room for post-mortem souls, among them Adam and his descendents and the Mandeans of the past. In the earthly worlds the dimensions of darkness and light are mixed and interacting, struggling to overcome each other; one is our visible one; the other is invisible and filled with good and evil spirits, beasts and other powers. All four worlds interact with each other as interpenetrating dimensions under the most sublime dimension of Light, understood as the omnipotent omniverse (Lupieri, 2002; Teresi, 2002). John and Jesus were educated in Ptolemaic cosmology; they would not have imagined the light-centered Copernican model and definitely not post-Einstein quantum mechanics of multiverse. They would found both of these models to be much richer and closer to their vision of the supreme light dimension and to the kerygma of God 'in our midst' and worlds and lives thereafter.

Kant in his 'Critique of Pure Reason' 1781 had demonstrated that our understanding and recognition of the world is based on the categories of 3-dimensional space and time, beyond which we can neither prove, deny or even dispute anything. Thus, he considers the existence of 'God, Liberty, Immortality' as 'regulative ideas' for living a morally and culturally good life. Modern cosmologists prove Kant's reasoning true and argue that multiverse theories lack scientific testability but are logically most reasonable, simple and elegant; their foundation is 'hypothetico-deductive logic which permits a theory to propose unobservable entities if these help to explain observable outcomes'. Max Tegmark, a leading multiverse

experts, sees the validity of multiverse theory in its simplicity: 'A common feature of all four multiverse levels is that the simplest and arguably most elegant theory involves parallel universes by default. To deny the existence of those universes, one needs to complicate the theory by adding experimentally unsupported processes and ad hoc postulates: finite space, wave function collapse and ontological asymmetry. Our judgment therefore comes down to which we find more wasteful and inelegant: many worlds or many words. Perhaps we will gradually get used to the weird ways of our cosmos and find its strangeness to be part of its charm' (Tegmark, 2003; Randell, 2005). Neutrino particles accelerated by CERN's Hadron supercollider in Geneva and sent to Northern Italy moved faster than light, a phenomenon which cannot be explained by Kant's or Einstein's models but suggests other dimensions known to and used by these particles as some physicists suggest (Cookson, 2011).

3. Differentiations and Transitions in Living Multiworlds

Visible life already in our own physical three-dimensional world 'sees' this single one geographical universe – our earth – in different world-'views'. We humans have ophthalmological recognition of environment and space and a visual memory for orientation and understanding of life, culture and goal; we have maps, we like oilpaintings, movies and photos. Bats understand space acoustically by communicating in an echo-sound structured world of echolation; what type of echolot music-sound interaction might bats find to be more enjoyable than a Mozart or a Vienna waltz? Dogs orient themselves by sense of smell in olfactory knowledge by olfaction; they 'know' places you or I have walked on and where they have been; they find the whereabouts of people by following these people's odor from yesterday and most likely will enjoy olfactorial ouvres or processes of art as we enjoy movies or paintings. The starfish has a circular brain, different from our two-sided brain and body. Is the starfish superior in reasoning, Ernst Juenger has asked? We humans only differentiate between right and left, good and bad, gauchism and droit, while the starfish would have a more complex (superior?) reasoning in a more complex body and more complex biological interactions with its environment; he might find our distinction between right and wrong, left and right quite simplistic. Natural capacities of dogs, bats, starfish and nearly all other creatures are far beyond our human capacities, to recognize, to understand, and to interact with those worlds. They, however – we might assume but don't really know – do not have concepts or models of 'other worlds' or multiworlds, even though they definitely live in, reach out and act in 'universes' unreachable and inaccessible to us. The Book of Revelation goes even further and envisions a 'new world' coming after this one and describes in detail the multiverse interpenetrations and interactions during the last days of birthing the new world. Paul stresses that 'the creation itself will be set free from its bondage to decay and obtain the glorious liberty of the children of God' (Rom 8:21); thus one multiworld will change into another multiworld. Isaiah as well envisioned other dimensions where lions and lambs play together, and small children and snakes in pastoral settings with plants and trees (Is 11:6f; Jahr, 2012d).

Quite a number of multiverse modifications occur already in our visible worlds.

Many forms of life enjoy different properties, modifications, lifestyles, experiences, environments, some much more diverse than ours. Do they live in their own worlds, even though they share the same space-time dimensions with us? Does the butterfly, in its earlier stages of an egg and a larva, knows about becoming a free-flying butterfly later? Most likely, it does not. Does the egg or the larva aspire to become something else and more free in the future, – in the same life or another life? Cicadas have different forms and shapes of life: the egg hatches into a nymph, which drops to the ground and burrows itself; then it lives underground for a specific time of 17, 13, or 5 years and feeds on roots before in their final stage as an instar it digs a tunnel to the surface and sheds her skin, called molting, and abandons it on the bark of trees. How many forms and stages in the life of one individual cicada would these be altogether? Does the small mustard seed knows, that it will eventually become a huge mustard tree? It has, as Jesus put it, the capacity and potential, and maybe even the ingrained goal and vision to grow into whatever form this vision or potential may be: a huge tree.

And where is 'paradise' in multiworld worlds? Is the paradise another world to come or an already existing dimension in multiverse? Comenius, the great mystic and teacher, wrote a book 'Lux in Tenebris' (Light in the Dark) describing visions of people, who have reportedly seen those other worlds. He also elaborates on three stages in human life: embryonic life, individual physical life, post-mortem life. Jahr was influenced by Comenius (Jahr, 2012e). These are the three stages in multiverse life: the first two each are ending in stress, despair, pain and angst and in a natural biological feeling of 'this is the end!' Do embryos know – in the strict sense of knowledge as empirically proven and provable evidence – that at the end of pain, angst and stress, there will be a new life – 'the real life', – most likely, they do not know. But we know very well, that there is life after birth, indeed a much richer and more complete life. Do we know – in the strict sense of knowledge, – that there will be life after death? No, we don't have that knowledge empirically or scientifically. As already mentioned, Kant has demonstrated that our intelligence and body is bound into a three-dimensional space on a temporal scale. Simply: we don't know for sure, whether it is 'real', whatever modern science explores about a multiverse and multiple worlds, even though the assumption of a multiverse is more simple and easier than that of a universe. Jahr's and Comenius' narrative presents a suggestive probability. They are exercises in plausibility theory and practice similar to contemporary quantum mechanics. As these models and methodologies of quantum mechanics suggest, Jahr's case study could be read as to be more elegant and eventually simpler than models of an abrupt life ending in physical death. Apostle Paul (Hebr 11:1ff) explains that only 'faith is the assurance of things hoped for, the conviction of things not seen … what is seen was made out of things which do not appear'. Pastor Jahr, in reference to Paul (2.Cor.5:1) suggests that dying might be compared to changing clothes: 'Dying always appears like a catastrophic event – at least for him who has not yet experienced it before. And this includes all humankind on this earth. Bu whoever would be able to regard dying in retrospect, might perhaps find that it is not such a catastrophe, not nearly as forceful as it seemed! … In

retrospect, we might find that, when our soul departs our body it may be no more uncomfortable than taking off a coat or clothing, which perhaps were rather uncomfortable and too small and now we feel much better.' (Jahr, 2012f). It is in these arguments, where the theologian and believer Pastor Jahr meets Fritz Jahr, the biophilosopher and bioethicist.

4. The Imperative 'Do No Harm' the Lives of the Lands and the Multiworlds

The *primum nil nocere* principle and virtue in Hippocratic medicine of doing no harm in the first place, i.e. balancing minimal or low risk with good success and supporting or healing outcome, can and must be extended to all forms of life in the global dimension of land ethics, cultural geography and integrative bioethics. Forms of life live together and depend on each other; humans are no exemption from this rule. Each of us is home to some 100 trillion microbes and we could not live without them, nor would they live without us. Summarizes Rosamond Rhodes 'we used to think of ourselves as separate from nature … now it's not just us, it is us and them' (Zimmer, 2011). We only now become aware of the essential symbiosis between our microbiomes and ourselves. Of course, we consciously or accidentally modify, manipulate, or kill those forms of co-life interdependent with us, but we do so not necessary to our advantage, as we only start to learn today.

The earth in general can and has been hurt by humans; goat herding has changed the Mediterranean vegetation for millennia, shipbuilding by the Romans and particularly the Venetians indiscriminately cutting trees along the Istrian coastline of the Adria not followed by reforestation has washed out most soil over the centuries and resulted in meager vegetation. Earth and land are strong and can take quite some abuse and exploitation. Earth and land can and have recovered from severe natural disasters such as meteoric impacts, severe earthquakes, fires, newly modified microbes and predators changing established and well integrated and interacting environments.

The genetic code of life forms has modified itself accidentally and uncontrolled, subsequently changing the check-and balance of survival and interaction of various forms of life, as Darwin has described. Genetic codes of 'cultured' plants and trees and of 'cultured' animals, hybrids and crossbreeds produced indirectly by selective breeding, have also changed plant life and animal life together with entire agricultural landscapes. Microbes and retroviruses have been bred strategically in order eradicate deadly diseases or improve therapy. Hybrid plants, some still controversial, will increase food supply and might or might not be more friendly to the environment. The term *culture* originally comes from the Latin word *cultivare*, i.e. working the ground, weeding out unwanted growth, supporting the good and edible and healthy crops and fruits, selectively breeding for even better use. One of the first moral cases related to the culture of deliberate breeding is reported in the Old Testament (Genesis 30: 25-36, 43). Jacob was herding the herds of his father-in-law Laban for no pay, but he requested to be given all crossbreeds after a year or two; Jacob then let the purebred herds be together at the watering places and for longer times, so they could breed across breeding lines. This 'unprofessional' behavior of Jacob was not part of

the oral contract between the two partners and was considered immoral by Laban, of course. The bible reports that Jacob 'grew exceedingly rich, and had large flocks, maidenservants and menservants, ands camels and asses', – an indication that genetic manipulation and re-manipulation was well known and practiced and caused ethical issues already thousands of years ago.

Jacob did no harm to the animals and their offsprings; but he was unfair to the father of his wife, who had exploited him unfairly earlier. Modern forms of genetic manipulation are more controversial in regard to life and happiness of those new forms. Purebred pigs having one rib more, do produce more and better meat, but are said to be extreme nervous and scared; thoroughbred milking cows cannot give birth anymore and have severe pain if not milked in short intervals; dachshunds get vertebra pain early in their life from walking staircases in private homes. We don't know if hybrid corn, having different biochemical processes than traditional corn crop or even uncultivated corn, might have a different plant psychology, and would suffer or 'scream' differently. Enormous powers of radiation unintentionally set free, uncontrolled or uncontrollable nuclear warfare, biological and other disasters will cause major changes in genetic change in all forms of life. Thus, the extreme risk of increased radiation is not only related to unfortunate death and cancer of those exposed, but even more so to real changes in the DNA setup of all forms of life. This in turn will change the interaction of individual and species life, of biotopes and balanced or slowly changing environments. Some new forms of life will survive or even dominate, others will do harm, will suffer themselves and will hurt others; long dormant DNA might reactivate. Those uncontrollable events will cause a new high-speed struggle for life, never envisioned by Darwin or anyone else before.

To expose all life, the land and the earth in general to an unimaginable increase in genetic modification runs against the visions and virtues of respecting life, making this earth the home and house of human civilization, of cultivation and of stewarding, – against the bioethical imperative. To play with fire and with radiation in an uncontrolled and uncontrollable way harms all forms of life, not only fellow humans. It is the opposite of cultivation; it is uncontrollable destruction and severe irresponsibility. Do recent experiences with nuclear energy disasters meet those standards of irresponsibility and a quest for radical change? *The 'do no harm' imperative, virtue and principle is a central component of the Bioethical Imperative, and as such in instrumental for the protection and respect of all forms of life on the land and on this earth.*

5. Bioethics of Land and Earth: Respect and Cultivate the Earth as a Living Being

The bioethical imperative calls for respecting all forms of life as ends in themselves, i.e. recognizing and respecting their individuality, including strengths and weaknesses, limits and capabilities. Such a respect does not exclude to use, to manipulate and to cultivate co-life for human and cultural purposes. But there are limits to manipulation and cultivation which are related to the limits of every form of life to change or be changed, to feel pain, to be degraded or to be extinguished for no

reasonable and morally defendable purpose. In regard to most animals and plants and environments universal bioethics the Bioethical Imperative calls for respect, for stewardship, and for cultivation (Passmore, 1974)[1]. But in regard to mother earth and to wild animals, it also calls for accepting what we cannot change, accepting the uncontrollable capacity and unpredictability of all forms of life. In regard to deadly microbes in hospitals and houses, the bioethical imperative calls for killing and eradicating.

The future of the cosmos in general and of the earth in particular is unpredictable and far beyond our powers of manipulation and cultivation. Of course, we have the powers to harm and to kill many fields of this earth, even make the earth in its entirety uninhabitable for humans and many species. But the respect for the earth as a living being and for all what is living on and in it calls for good protection from harm. It is definitely a prudent aspect of the bioethical imperative to respect powers, which we cannot change. The moral imperative in those situations requires staying clear form danger and risk in a similar way as we would not ride wild tigers or hug polar bears or infect ourselves with deadly viruses. Rather, the prudent and ethical response is to reduce risk and exposure. Respecting the earth as a strong and powerful living being includes to not build nuclear reactors on geographical fault lines or in other risky places, to discontinue technologies with low probability but highest risk features, to cultivate and not to destroy natural and agricultural environment, to limit genetic and other forms of manipulation to lowest possible risk including the risk of wrong risk prediction under uncertainty.

The *Bioethical Imperative* in its most universal and integrative form is a good instrument to not only respect and cultivate natural and social environments, microbes, plants and animals, but the earth as well in its individuality, its seasons and ages, as a home and support of all forms of live, in its unpredictability and danger. Our interaction with earth and cosmos includes respectful and careful recognition of powers beyond our influence and to adjust and to act prudently and morally for our own protection and cultivation and for the protection and cultivation of our natural and social environments. Riding wild tigers and playing with nuclear radiation contains extreme risks and dangers and runs counter to the Bioethical Imperative to respect and to support all forms of life and to prepare for dangers and disasters caused by living volcanoes and hurricanes, by earthquakes and the shifting of continental plates, by new or old deadly viruses attacking in pandemic proportions, – for the protection of fellow humans, for protection of the land and for protection of the earth as our house and home. Following Jahr's argument that 'if someone does not accept the validity' of the bioethical imperative, 'as far as it is concerned with animals and plants, then, in repeating what already was said, one nevertheless should follow it in recognition of the moral obligation toward human society in general' (Jahr, 2012g), we may conclude: *This earth is the only one we have, so if we do not respect her for what she is, we should do so for our own sake and for the wellbeing of our fellow humans, communities, and cultures.*

[1] John Passmore used the term 'stewardship' in 'Man's Responsibility for Nature' (1974) to describe what Potter, Leopold, Jahr and contemporary positions of deep ecology had in mind.

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