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BETWEEN GAIA AND MEDEA: RESCUE AND ADAPTATION STRATEGIES IN PEDAGOGY IN THE (POST)ANTHROPOCENE

Abstract: The article begins with two different metaphorical eco-critical diagnoses: James Lovelock's Gaia hypothesis, which views the Earth as a self-regulating system, and Medea Ward's hypothesis, which interprets life as a self-destructive force. In their context, selected ways of pedagogical thinking in the (post)anthropocene are presented, revealing two strategies: rescue-resilience and adaptation-resilience. The first, optimization-based strategy assumes that transforming education can have a positive impact on the planet and proposes new forms of relating to the more-than-human world. The second, based on speculation and non-obvious ways of thinking, postulates a subversive transformation of pedagogical categories, experimentation beyond the logic of repair, and opening education to emergent, unpredictable relationships. The conclusions of these analyses emphasize that, in a world where survival is no longer guaranteed, education requires, more than ever before, the courage to go beyond one's own assumptions and an openness to various strategies, including speculation, experimentation, and engagement with the incomprehensible non-human world.

Keywords: Gaia hypothesis, Medea hypothesis, (post)anthropocene, non-anthropocentric pedagogy, forest pedagogy, SDG 4, SDG 13

1. Introduction

In a world beset by the consequences of anthropogenic ecological catastrophes, pedagogy must subject its role to revision. Educational models grounded in control and predictability are fracturing under the pressure of planetary polycrises (Humeniuk, 2026), and the hitherto prevailing ways of thinking about the relationship between the human being and the Earth prove insufficient. In this context, particular significance attaches to approaches that seek to describe the dynamics of life on a planetary scale. The Gaia hypothesis of James Lovelock, postulating the self-regulation of the biosphere, and the Medea hypothesis of Peter Ward, indicating the self-destructive tendencies of life, offer divergent metaphors for diagnosing the condition of the planet. Both, although rooted in the natural

sciences, entail significant consequences for thinking about education, responsibility, and the co-inhabitation of the Earth. In this article I attempt to reconstruct two pedagogical strategies of “coping” with the current condition of the planet that correspond to them. These formulations may be classified, on the one hand, as rescue and resilience strategies and, on the other, as adaptation and resilience strategies. Each appears to draw upon different imaginaries of imagination, and each adopts a distinct mode of thinking about the tasks of education in the era of climate catastrophes. Their analysis opens a space for reflection on how pedagogy may address the challenges of the (post-)Anthropocene.

2. Gaia (James Lovelock) and pedagogical rescue and resilience strategies

James Lovelock describes his Gaia hypothesis in the text *Gaia: A New Look At Life On Earth* (Lovelock, 2003). Gaia is a complex entity that encompasses the Earth’s entire biosphere, atmosphere, oceans, and soils. It is a coupled, cybernetic system oriented towards the search for a physical and chemical environment on the planet that is optimal for life. The maintenance of relatively stable conditions through the active regulation of the system is termed by the author “homeostasis” (Lovelock, 2003, p. 28). Chapter by chapter, the author tests the Gaia hypothesis, examining its successive spheres, the disturbances occurring within them, and the remarkable consistency in the self-regulation of the macro-system thus formed. Beginning with an analysis of the origins of the planet, which science attributes to a supernova explosion whose consequence was, paradoxically, radiation beneficial to biogenesis; proceeding through an analysis of the dynamics of the formation of the Earth’s climate, where, despite radical cosmic events, the surface of the Earth for 3.5 billion years remained hospitable to life; and culminating in an account of the consistent self-regulation of the carbon dioxide content of the atmosphere and the chemical autoregulation of the oceans (Lovelock, 2003, pp. 103–104).

Analyzing the destructive impact of human beings upon the environment, the author concludes optimistically: “Uncertainty about the future of the planet and fear of the consequences of environmental pollution arise to a considerable extent from ignorance about the planetary regulatory system. If Gaia really exists, then we should expect the existence of groups of species cooperating in the performance of certain important regulatory functions” (Lovelock, 2003, p. 127). A separate chapter is devoted by the author to cybernetics, a field of knowledge concerned with the study of self-regulating systems of communication and the control of equilibrium in living organisms and machines. The author believes that “one of the most important characteristics of living organisms, from the smallest to the largest, is their capacity to develop, to act, and to maintain systems that have specific tasks” (Lovelock, 2003, pp. 64–65). The entire argument developed in the book is a consistent, step-by-step demonstration of precisely such self-regulating mechanisms. Thus, the work of James Lovelock offers a concept of the Earth as

a living, pulsating organism concerned with the maintenance of homeostasis, in which microorganisms, plants, animals, and geochemical processes are not separate entities but co-actors in a planetary drama. Each of them sustains the conditions that enable the continued existence of life, thus co-creating a planetary dynamic equilibrium.

The metaphor of Gaia as a living creature-organism, despite the numerous controversies and criticisms it has encountered (Brockman, 1996), has nevertheless exerted a strong influence on Western humanities. Within it, the myth of Gaia has been adopted as one of the versions of the myth of the Great Mother. As Beata Jakubowska indicates, the great goddess is “the creator of the world, the eternal mother, the eternal virgin. She contains within herself everything that contains anything, nourishes everything that nourishes, and is the source of life for everything that lives” (Jakubowska, 2003, p. 594). The concept proves a most efficient tool for reflecting on and defining the relationship with the planet, a lever of imagination worth taking advantage of. The efficacy of the tool is borne out by its popularity in scholarly and everyday discourse, in the narrative of the humanities, popular culture, natural sciences, as well as medical, political, and social discourse (Wężowicz-Ziółkowska, 2023, p. 23).

The Gaia hypothesis is first and foremost a metaphor of the planet’s agency. Undermining the anthropocentric framework, it helps imagine the planet as a dynamic whole, as a organism jointly created by innumerable forms of life. It constitutes a figure of the decolonization of nature understood as the search for new ways of being in the world and thinking about it (Chaberski, 2022). The clearly pedagogical dimension of the metaphor sees Gaia as conceptualizing the world and teaching new ways of living within it. Gaia introduces into educational discourse the notions of interdependence, responsibility, and care in relation to the complexity of systems; rather than seeing the environment as a resource, it sees it as a shared living space. This type of reflection appears with increasing frequency in Polish pedagogy.

The principal advocate of the Gaia hypothesis, Maksymilian Chutorański (Chutorański, 2020), demonstrates convincingly that pedagogy rooted in anthropocentrism is unable to respond adequately to the challenges of the (post-) Anthropocene, as it perpetuates a hierarchy separating the human being from the rest of the world. By proposing a movement beyond humanism and anthropocentric assumptions and a shift towards relational pedagogy, the author presents education as a process of coexistence and co-creation with more-than-human entities, requiring the abandonment of the illusion of human exceptionalism (Chutorański, 2020, p. 193). As a result, non-anthropocentric pedagogy appears as a transformative project: it cultivates sensitivity to networks of interdependence, opens the way to new forms of responsibility, and transforms education into a practice of co-being with the planet rather than domination over it. The author “inventories” the complexity of entanglements within networks of interdependence

and relations in a situation in which “education happens”, rendering their opacity visible (a pupil in a lesson – his phone – making purchases in an online shop – the language of software and applications in the phone – policies of distribution and regulation governing this software – child labor in cobalt mines in the Democratic Republic of the Congo, etc.), demonstrating that this situation has consequences at physical, chemical, biological, geological, and atomic levels. Every action initiates or sustains numerous chains of feedback loops, and this inevitably means that it is impossible to teach, educate, instruct, train, or perform other pedagogical activities without also changing the world in non-pedagogical ways (Chutorański, 2020, pp. 180–184).

Within the perspective of relations and interdependencies understood in this way, as presented by Maksymilian Chutorański, it is possible to situate, among others, the postulates and experiences of forest pedagogy. The editors of the thematic section of the journal *Forum Pedagogiczne* entitled “Pedagogika lasu” emphasize that the forest is a natural entity with a high degree of biodiversity and *self-regulation* (emphasis: MH). (Paluch & Klimski, 2022) In the era of environmental crisis and the faltering extractivist methodology of development pursued before, the figure of the forest additionally becomes a kind of pedagogical medium offering the possibility of seeking sustainability and *equilibrium, harmony* (emphasis: MH) and beauty, naturalness and community, unity and *the continuity of life processes in their cycles of passing and renewal* (emphasis: MH). A forest offers a plethora of tools and opportunities for learning, education, and upbringing for the future in the world which has created us, surrounds us, and has found itself under threat (Rykowski, 2022). The pedagogy of the forest and the related pedagogy of nature share the underlying principles of *outdoor education, adventure education*, of German and Czech pedagogy of experience (Palamer-Kabacińska, 2024; Śliwerski, 2022); they are underpinned by the support of the holistic development of personality via posing challenges in the use of nature as a means and via acting with others in contact with nature, which in these approaches becomes a part of a living and interactive ecosystem (Palamer Kabacińska, 2020).

Crucial for such approaches is the recognition of Gaia as a living organism made up of networks of actors and the complex interdependencies among them, as well as the expansion of awareness of these interdependencies, the conscious seeking out of and exposure to them, the embodiment of co-presence, interactions, familiarization, attentive listening, observation, and, ultimately, appropriate rescue-oriented responses: designing “new” post-anthropocentric educational formulations, correcting one’s own anthropo-practices, counteracting devastation, regenerating and cultivating resilience, preserving, restoring, and caring. Pedagogy inspired by Gaia becomes an art of attentive listening and attuning oneself to the logic of homeostasis. It is a pedagogy of care for harmony (positive, nourished by hope, resonating with the vision of an achievable planetary equilibrium) carried out with faith in human agency and in the idea that understanding interdependencies,

training certain competences and skills, and internalizing and externalizing forms of responsible co-existence can sustain this equilibrium, and thereby preserve the forms of life we know. I call this formulation a rescue and resilience one. A strikingly different perspective emerges from the metaphor of Medea as put forth by Peter Ward.

3. Medea (Peter Ward) and pedagogical adaptation and resilience strategies

The Medea hypothesis, formulated by the paleontologist Peter Ward (Ward, 2010), is now one of the most radical and pessimistic visions of the history of life on Earth circulating in scientific, popular, and cultural discourses (cf. Bugajska, 2018). In contrast to the optimistic conception of Gaia proposed by James Lovelock, Ward presents a narrative of a planet on which life has repeatedly acted against itself. In his framework, the Earth is not a living organism concerned with stability, but an arena of constant tensions, conflicts, and catastrophes, originating from biological processes themselves. It is life—not meteorites, not volcanoes, not cosmic accidents—that is the primary agent of mass extinction. “I propose the hypothesis,” Ward writes, “that ‘Mother Nature’, as life and its processes are often collectively called, has not been, is not, and will never be a good mother to the numerous species already existing or still to emerge through evolution. Therefore, as a counterpoint to ‘Mother Nature’, I propose the ‘Medea hypothesis’, named after one of the worst mothers of all time, invoking the mythological figure who, in an act of desperation, kills her own children” (Ward, 2010, p. 20).

“The name Medea,” the author continues, “therefore seems appropriate for describing terrestrial organisms that (...) are genetically selfish and lethal toward other manifestations of life. I assert that the consequence of this malign motherhood will be a shortening of the lifespan of life on our planet. Life itself will bring about this fate through the unconscious alteration of environmental conditions” (Ward, 2010, p. 21). The Medea metaphor is thus key to understanding a concept in which life, driven by local adaptations and short-term evolutionary success, lacks the capacity to anticipate the consequences of its own impact and, over geological timescales, precipitates catastrophes that destroy a substantial portion of existing species.

Ward reconstructs the history of the Earth as a series of dramatic episodes in which the development of some life forms destabilized the conditions necessary for the survival of others. He consistently demonstrates that life does not optimize the state of the world; on the contrary, it leads to its inexorable and often violent demise. One of the most striking examples is the oxygen catastrophe which occurred around 2.5 billion years ago (Ward, 2010, pp. 114–115). As cyanobacteria began producing oxygen, the composition of the atmosphere changed radically. Although oxygen is essential today, it was toxic to contemporary organisms, resulting in mass extinction. Ward identifies this as the first act of Medea: in developing, life created

conditions that destroyed earlier forms. This is not an accident, but a characteristic of life: its capacity to transform the environment in ways that threaten its own continuity. Evolution does not aim at harmony but is a blind process in which local successes may lead to global catastrophes.

The Medea hypothesis, therefore, attempts to dispel romanticized notions of nature as a space of balance and self-regulation. Ward argues that such thinking is not only mistaken but dangerous, as it fosters a false sense of security. If we believe that the Earth will “take care of itself,” we may underrate the magnitude of threats arising from human activity or, conversely, succumb to the illusion of control over the forces of life and death. The contemporary climate crisis is yet another manifestation of this same dynamic: human actions induce changes that may prove catastrophic not only for other forms of life but for humanity itself. We, as humans, are a spectacular confirmation of this rule. The Medea hypothesis tells a story of instability, fragility, and discontinuity in life; this is a story about the nature of dying. Life does not strive for harmony but for expansion, which can prove self-destructive.

The Medea metaphor, like that of Gaia, undermines anthropocentrism and lays bare our entanglement in complex networks of beings. He nonetheless emphasizes that, as a species, we operate within an unstable and unpredictable system, one that demands humility in the face of natural processes and an awareness of the unintended consequences of our actions. Related to this is Stengers’ concept of Gaia intrusion: a force indifferent to human concerns, penetrating human worlds and revealing their fragility (Stengers, 2015; Borowski, 2023). Pedagogy emerging from this vision does not seek equilibrium; rather, it challenges dogmas, teaches how to live in a world devoid of stability, cultivates attentiveness to the unpredictable, and fosters responsibility arising from tension. It embraces the wildness of the (post-) Anthropocene, building resilience in the face of surrender and adaptation, encapsulated in Jessie L. Beier’s concept of *Weird Pedagogies*.

Jessie L. Beier (Beier, 2021) claims that the unprecedented ecological, social, and psychological factors characterizing today’s life in the face of the polycrisis related to (post-)Anthropocentrism (Humenuk, 2025) are not to be seen as catalysts of the rebirth or redemption of humanity and its living systems, education included, but rather as the grounds for a rebellion within their framework. Such pedagogical thinking should proceed only in this way when confronted with unimaginable scenarios and utterly incomprehensible conditions of life. After all, it is impossible to imagine new qualities of culture while continually drawing on the same resources of its imaginary. Conceptually, Beier’s project can therefore be situated within the intensively explored recent research on the crisis of social imagination in the era of late capitalism (Bińczyk, 2023; Jasikowska & Pałasz 2022 et al.). Over thirty years ago, the American literary scholar Lawrence Buell warned that the ecological crisis derives directly from a crisis of imagination (Buell, 1995). This reflection strongly resonates with a discourse that could be described as rescue-oriented: worldview

changes and the exercises aimed at fostering imagination drained by modernity and late capitalism become tasks as consequential as pro-climate technological interventions (Ochwat, 2025).

Drawing on the philosophy of Deleuze and Guattari, Beier argues that the pedagogical character of thinking and imagination should focus on practices of concept creation that oppose prevailing systems of representation. In order to counteract the conditions that perpetuate the status quo of pedagogy, educational research should generate questions, methodologies, and approaches that radically problematize its existing field, as well as experiment with the implementation of innovative research practices (Beier, 2021, p. 46). The author presents a series of subversive and experimental investigations within critical engagement with concepts and practices taken for granted. These are also demanding exercises of imagination, as Beier transgresses, experiments, breaks away, subverts, and pushes conventional boundaries.

One of the key issues subjected to this subversive scrutiny is the so-called “future of education”. She demonstrates that Western thinking about education continually falls prey to the illusion of simple, predictable, and unlimited progress, and thus to the assumption of linear continuity between past, present, and future. It is as if it were self-evident that some future must exist, and that it will inevitably be a human future (with humans, for humans). This condition means that even the most progressive educational theories and practices, which Beier dubs the *Industry of Education* (Beier, 2021, p. 32), ultimately do not diverge far from their predecessors. Education “is always presented as a tool that will allow us to reach a utopian future (...) that will provide us with light and lift us out of darkness. Yet today it is clear that the image of the future presented in education is no longer coherent with external or non-human thinking about ecocatastrophe, with the perception of our existence from a non-human perspective (...) of a planet that could exist without us. In view of this disjunction, educational thought has become trapped by what it cannot conceive” (emphasis: MH) (Beier, 2021, p. 56).

Most often, education merely modifies or supplements its own resources slightly with more “natural,” “ecological,” or “relational” justifications and scenographies, without ever questioning the widespread references to dogmatically positive and “redemptive” images of its own future (“If we act in the right way, we will save the planet!”), as if hope – despite the overwhelming diagnosis of the state of the world – remains a good reserved exclusively for humans. Such efforts prove entirely inadequate in the face of real environmental, social, and psychological challenges. “While ecological catastrophes continue to multiply, the structure of social solidarity is degrading, and subjective potential erodes under the weight of a powerful yet illusory consensus that ‘there is no alternative’ to the current state of affairs, the education industry has not yet fully confronted the grim reality that the planet is undergoing uncertain and catastrophic transformations that may deprive even our own species of its ecological niche. (...) Almost all philosophy

of education is written in the conditional tense, based on the assumption that the future will endure forever” (Beier, 2021, p. 55; Guattari, 2025).

Seeking an alternative to such a conception of the “future of education”, Beier undertakes thought experiments and speculations in which she attempts to link issues of educational futures with “strange” forces and the intensity generated by current, unimaginable planetary realities. She experiments with modes and styles of conducting educational research, developing examples of speculation in which pedagogical thought is situated in “external” contexts, beyond human influence (for example, juxtaposing sustainable development with the concept of a black hole to create the notion of “black hole sustainability” and then exploiting it pedagogically). Through these interventions, pedagogical situations are created with the aim of subverting or challenging dominant ways and methods of interpreting the world. The result is an original concept resonating with the unimaginable realities of the world, which the author terms the “sprouting of strange pedagogy” (or more precisely: weird (non-)pedagogies) (*Germinating a Weird Pedagogy*) (Beier, 2021, p. 277 ff).

The concept of weird (non-)pedagogies emerges out of Deleuze’s perception of thinking as a material process, which does not represent the world but arises in contact with its “outside”. In the speculative experiments inspired by this philosophy, Beier turns pedagogy away from its traditional functions: from predictability, the accumulation of knowledge, and productivity. Strange (non-)pedagogies are not concerned with effectiveness, nor do they propose a single method or unified project. They constitute a reservoir of heterogeneous practices emerging from local problematizations and the engagement of thought with what is alien to it; they question the rationality that enables the education industry (the production of theories and practices) to function according to established principles, and they undermine the legitimacy of education, which persists within a logic of “compulsory optimism”, repeating claims such as “humans can avert catastrophe” or “children are the future”, even as the future itself becomes increasingly unimaginable. In this sense, Beier’s thinking resonates strongly with the Medea hypothesis (metaphor) of Peter Ward, a vision of life that does not seek equilibrium but has repeatedly precipitated its own catastrophes throughout planetary history.

Beier develops a pedagogy arising from a similar recognition: the world is an unstable, unpredictable, and frequently destructive space, one to which education must learn to respond differently. In her diagnosis, it is precisely education itself, through its habitual practices, narratives, and humanist fantasies of progress, that becomes part of the problem. Just as Medea destroys her own children, contemporary educational systems destroy the capacity to think about the future, reproducing a world that is itself falling apart. Her project does not aim to repair education, but to create conditions in which thought can be “compelled by the external,” by that which is non-human, unpredictable, and incomprehensible. Her strange (non-) pedagogy does not attempt to domesticate or halt catastrophe; rather, it teaches

how to think from within it. Instead of stabilizing the world, it accepts its volatility. Strange (non-)pedagogy does not believe in the self-regulation of the world nor in the possibility of its salvation through education; it is not an agenda of repair but a speculative experiment exploring the limits of thought and offering no promise of deliverance. It is a pedagogy that teaches how to live and think in a Medean world.

4. Conclusion

In the face of ever intensive global crises, pedagogy confronts the necessity of transcending the earlier prevailing interpretative frameworks of the world in the (post-)Anthropocene. The ecocritical diagnoses of Gaia by James Lovelock and Medea by Peter Ward point to the need to depart from the anthropocentrism that has underpinned education for decades. Rescue and resilience strategies remain within a logic of repair, grounded in the conviction that humanity and human education can impact the world, regulating it, and even arresting its catastrophes. By contrast, the adaptation and resilience approaches, represented by speculative, weird (non-)pedagogies, concentrate on functioning under conditions of fundamental uncertainty and the absence of stable horizons. They do not offer rescue but rather open a space for thinking otherwise. In a world which offers no guarantees of survival, education may remain alive only insofar as it can question itself and allow for the emergence of the unimaginable through speculation, experimentation, and contact with an incomprehensible external world.

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