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# GAIA LIVING WITH AIDS: TOWARDS RECONNECTING HUMANITY WITH ECOSYSTEM AUTOPOIESIS USING METAPHORS OF THE IMMUNE SYSTEM

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ABSTRACT *This paper looks at the dynamic interface between disease, environmental degradation, and human behaviour. It is argued that the role of the ecosystem in maintaining health on a planetary scale can be likened to an organism's immune system. However, humanity's mental and emotional disconnection from these autopoietic processes is a form of ecological autism which is detrimental to the health of humans and ecosystems alike. This ecological autism is resulting in human systems acting like an autoimmune disorder; so that GAIA is living with AIDS. It is suggested that employing metaphors of the immune system to aid understanding and empathy might ameliorate this by helping humanity to realize its embeddedness within nature and to recognize the consequences of its actions.*


**Key words:** autopoiesis, ecological autism, ecopsychology, metaphor

> The most important characteristic of an organism is that capacity for internal self-renewal known as health. (Aldo Leopold)

Although health is a desirable condition for humans to achieve, it is increasingly being used as a metaphor in conjunction with ecosystems. This paper argues that this 'health' metaphor can be developed further, to state that the planet's ecosystems work as an immune system, protecting its biotic community from disease or illness. It is further argued that without realizing its interconnectedness within the planet's ecosystems humanity is increasingly straining this immune system, which is detrimental to the health of humans and ecosystems alike. The metaphor that the planet's ecosystems are suffering an autoimmune disorder may have a place in helping humanity to realize its embeddedness within nature and to recognize the consequences of its actions.

The paper comprises three main sections: the first looks at the ability of ecosystems to maintain health and the dynamic interface between disease, environmental degrada-



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tion, and human behaviour. The second section focuses on the role of humanity's mental and emotional disconnection from nature's self-renewal processes. The final section discusses how employing the metaphor of the immune system to aid understanding and empathy might ameliorate this.

## AUTOPOIESIS: NATURE'S IMMUNE RESPONSE

To begin with, let us consider the validity of an immune system metaphor, arguing that the planet's ecosystems do actively sustain biotic health, and, when damaged, biotic and environmental sickness proliferates. In this paper, health is conceived of holistically rather than in isolation, especially when looking at ecological systems. Therefore, from the outset it is necessary to make explicit some assumptions implicit to this argument.

I am taking the ontological position of "the newly emerging paradigm . . . [which] may be called a holistic worldview, emphasising the whole rather than the parts" (Capra, in Sessions, 1995, 20). This paper draws on insights from ecopsychology, systems theory, ecofeminism, and deep ecology, which emphasize life's interconnectedness and critique the Cartesian duality that permits mind to be separated from matter:

> All natural systems are *wholes* whose specific structures arise from the interactions and interdependence of their parts. Systemic properties are destroyed when a system is dissected, either physically or theoretically, into isolated elements. (Capra, in Sessions, 1995, 23–24)

This new paradigm employs organic and systemic metaphors, rather than the mechanistic metaphors still prominent in reductionist science where health is the property of the 'well-made', as Descartes stated:

> I consider the human body as a machine. My thought compares a sick man and an ill-made clock with my idea of a healthy man and a well-made clock. (Capra, in Sessions, 1995, 21)

This implies the existence of an external creator or agent, with nature as passive 'object' devoid of its own agency (*see* Merchant, 1983, Chapter 1), whereas the new paradigm conceives of nature as actively creating itself. This has led to holistic or systemic views of 'health' being increasingly used with regards to ecosystems, both as a normative concept and an endpoint for environmental management (Costanza, in Costanza et al., 1992, 14). 'Health' is seen as an integral property of the whole system, with the health of each individual 'part' intrinsically connected to the system's processes and inter-relationships.

> A healthy system must also be defined in light of both its context (the larger system of which it is part) and its components (the smaller systems that make it up). (Costanza et al., 1992, 240)

Subsequently, the larger ecosystems and their components are actively involved in their own 'health'-making maintenance. General systems theorists call this capacity for self-making/self-renewal/self-restoration 'autopoiesis'. It is the ecosystem protecting and supporting life by organizing and adapting itself, becoming more complex and differentiated – a dynamic process of being healthy and increasingly creative (e.g. Macy, 1991a, 186; Bateson, 2000; Warren, 2000). It is this autopoietic capacity that is the crucial indicator of health – a process of actively protecting, maintaining, and sustaining ecosystem health, defined as:

- homeostasis
- the absence of disease
- diversity or complexity
- stability or resilience



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- vigour or scope for growth
- balance between system components. (Costanza et al., 1992, 239)

Lovelock's description of GAIA theory is a well-known account of how ecosystems maintain homeostasis, which is vital for sustaining healthy life on earth (Lovelock, 1995). In addition, the planet's ecosystems synergistically sustain health by promoting 'the absence of disease' (Costanza et al., 1992). In effect, I suggest that the planet's ecosystems are analogous to an organism's immune system, helping to protect against disease and illness.

Psychoneuroimmunology 'reflects the interdependence of psychosocial processes, and nervous, endocrine, and immune systems' (Du Nann Winter and Koger, 2004, 123), so that in organisms, mental processes are intrinsically linked to the immune system. As we see later, as well as being physical and biological, autopoiesis is a mind-like process adapting and responding to stressors (Bateson, 2000). It is implicitly a holistic concept. Viewing the organism's immune systems purely in terms of antibody responses is reductionist, whereas the organism's immune system can be viewed holistically.

Although the immune system is inherent to organisms, its function is to prevent illness and protect the organism from both external and internal sources of disease. The survival of any part is dependent on fitting within the whole, so in effect, potential pathogens are adapted to or eliminated by other organisms and ecosystem processes over time. While different 'immune' processes are involved on this planetary scale than in organism immune systems, the overall effect is similar; the planet's ecosystems with their autopoietic processes optimize health and protect biota from disease. A clear example of external protection is the ozone layer, which protects against the sun's harmful radiation. As a direct result of human activity/consumption, the ozone hole has appeared, leaving an area of the earth unprotected. This, in turn, has led to an increase in skin cancers, which, to my mind, is an example of ecopsychosomatics: a mental state causing physical disease through the environmental–human health interface. (For information on the ozone layer hole and skin cancers *see*: 'The Ozone Hole' website, www.theozonehole.com.)

Costanza points out that health and sustainability are closely linked, 'these [health] concepts are embodied in the term "sustainability", which implies the system's ability to maintain its structure (organization) and function (vigour) over time in the face of external stress (resilience)' (Costanza, in Costanza et al., 1992, 240). Increasingly, unsustainable human activity is compromising ecosystem health, in turn damaging human health. Aldo Leopold describes disappearance of plants and animals 'as symptoms of sickness in the land organism' (Warren, 2000, 164). There are ever-increasing signs that globally ecosystems are sick – climate change, damaged aquifers, loss of biodiversity, acidification, desertification, ozone depletion, species extinction, as well as the increasing number of diseases, viruses, and plagues affecting life in the biosphere, may all be seen as symptoms of an ailing planetary ecosystem – a sickening world.

Environmental degradation is ecosystem 'sickness', increasing diseases within the environment and diminishing the ecosystem's self-restorative abilities. As a result of unhealthy ecosystems, there are an ever-increasing number of diseases, affecting both humans and other life forms, with a degree of cross-infection (*see*, for example, the Ecohealth online journal, 2005).

'Zoonotic pathogens [those transmitted between humans and other animals] are responsible for 75% of the emerging dis-



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eases affecting humans' (www.ewire.com/display.cfm/Wire_ID/2144). Global trade has been implicated with increased incidents of disease: 'Kimball et al. examine the phenomenon of trade-related infections; they show, through several case studies, the interplay between global trade in commodities and the emergence of new infections' (www.ewire.com/display.cfm/Wire_ID/2144), *see also* Kimball et al., 2005).

In turn, human mental and physical health, including that of future generations, suffers through environmental stress/toxins/pollution and damaged ecosystems:

> The wellbeing of an eco-system of the planet is a prior condition for the wellbeing of humans. We cannot have wellbeing on a sick planet, not even with our medical science. So long as we continue to generate more toxins than the planet can absorb and transform, the members of the earth community will become ill. (Swimme and Berry, 1992, in Du Nann Winter and Koger, 2004, 146)

Pollution and environmental toxins that 'can significantly impact neuropsychological and physiological systems' are damaging the health of both humans and the planet (Swimme and Berry, 1992, in Du Nann Winter and Koger, 2004, 139). The medical profession now recognizes 'environmental illness' in humans, in the form of 'various allergies, chemical sensitivities, and "sick building syndromes" associated with air pollution.' (Swimme and Berry, 1992, in Du Nann Winter and Koger, 2004, 127):

> The relationship between environmental factors, stress, and disease are complex. Environmental stressors can produce physical symptoms and directly cause disease; disease itself is a physical stressor. (Swimme and Berry, 1992, in Du Nann Winter and Koger, 2004, 139)

The psychogenic causes of ecosystem damage are at the heart of ecopsychology, informed by all branches of psychology (*see* Du Nann Winter and Koger, 2004). An example, from psychodynamics, is object relations theory. Here object relations theory emphasizes that unhealthy psychological development, can damage 'the self–other split', impairing 'our relationship with other people and the environment' (Du Nann Winter and Koger, 2004, 43). This can lead to neurotic behaviours, such as *narcissism*, with likely environmental consequences:

> Our inability to appreciate nature for its own complexity and beauty signals a deeply seated narcissism whereby we see the natural world only as resources. . . . At best, other species are considered irrelevant. (Du Nann Winter and Koger, 2004, 45)

There are far too many complex interactions and transactions occurring within human–environmental interfaces to describe in such a short paper but, as Rapport states, 'no single disease process has led to the current environmental predicament – unless one speaks of human imprudence'(Costanza et al., 1992, 146). The growth of human populations, consumption, industrialization, transportation, and warfare are affecting ecosystems, wildlife, and humans, with devastating results. As human activity damages the planet's health stressors, illnesses, and diseases increase. Simultaneously, the restorative effects of natural environments are mitigated by the destruction and disturbance of those environments (Costanza et al., 1992, Chapter 5).

So the smaller system of humanity is damaging the larger planetary ecosystem. 'We are like the cells in the body of the vast living organism that is planet earth. An organism cannot continue to function healthily if one group of cells decides to dominate and cannibalize the other energy systems of the body' (Metzner, in Roszak et al., 1995, 67). Yet, ecosystems have autopoietic prop-



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erties, and humans are part of these ecosystems. So why do 'symptoms of sickness' exist? Why isn't humanity participating in the autopoietic, health-promoting, processes of the planet?

As long as humanity, as part of the planet's systems, continues to degrade the autopoietic capabilities that protect against disease it is, to further the immune system analogy, behaving like an autoimmune disease. An autoimmune disease occurs when the body's immune system reacts against its own components, producing disease or functional changes. I stress that an analogy is being made here, from the ontology of interconnectedness, where the earth is implicitly an extension of humanity's body, and humanity forms an element of the planet's autopoietic capability. As Kidner explains: 'if the normality of our day-to-day lives depends on exploiting and degrading the natural order, then *psychological* "health" will embody an intrinsic *ecological* pathology; and human life is defined as a form of parasitism' (Kidner, 2001, 69).

## AUTISM: BARRIERS TO CONNECTING WITH NATURE

The deep ecologists' perspective on this '*ecological* pathology' is that limited/unrealized notions of 'self' as separate from the environment contribute to humanity's dissociation from nature (Du Nann Winter and Koger, 2004, 193). Mental and emotional boundaries between self and perceived 'other' are creating human–ecosystem barriers, preventing humanity from fully co-participating in the autopoietic process. As we shall see, consequently, the human psyche does not fully integrate/identify with planetary ecosystem's psyche/mind-like processes.

Arne Naess coined the term the 'ecological self', for the fully self-realized individual, whose self-concept or sense of identity expands to include the biosphere and all its inhabitants (Naess, 1985, 256–270; Naess in Sessions, 1995, 225–239). The individual's connection to nature deepens on an unconscious, cognitive, emotional, and motivational level through an expanded identification with and realization of life's interconnectedness (Du Nann Winter and Koger, 2004, 193). The person's self-interest shifts from being egocentric to biocentric, integrating with Nature's psyche or systemic 'mind'.

Systems theorist Gregory Bateson explains in *Steps to an Ecology of Mind* (Bateson, 2000) that ecosystems exhibit mind-like properties. He understands 'minds' as processes – rather than 'things' – at many levels of being, not limited to association with brains or consciousness. These include all examples of systemic process, wherever there is an interaction between the parts triggered by difference, requiring energy and circular chains of determination. The term 'mentation' is sometimes used to 'describe the dynamics of self-organization at lower levels' (Capra, 1989, 315). Such 'minds' would include organisms, such as bacteria; parts of organisms, such as individual cells or organs; and also systems of multiple organisms, such as social groups, societies, or ecosystems. Each of these entities is mind-like in its activity and any given mind is likely to be a sub-system in some larger or more complex mind.

The mental is the subjective aspect of a system, so that each of the parts of the whole system has a subjective experience. Ervin Laszlo explains that 'the world of inner subjective experience is accepted by systems theorists as a given that must be understood in its own right, and whose process can be made intelligible in terms of systemic self-regulation' (Macy, 1991a, 82). In other words, the autopoietic process of nature is mind-like, with its own agency and subjective experience. In this way, 'all the



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phenomena in the world possess intrinsic . . . subjective inner natures,' states depth psychologist Stephen Aizenstat, 'these inner natures of the world's organic and inorganic phenomena make up the world unconscious' (Aizenstat, in Roszak et al., 1995, 96). These phenomena are experienced unconsciously in dreams and through our bodies. Ecopsychologists, like Roszak, emphasize an existing unconscious connection between the human psyche and nature, which is usually repressed in the 'unrealized' self. The 'ecological unconscious' is the 'core of the mind', where the earth can speak through us (Roszak, 1992, 320–321). He argues that reconnecting to this ecological unconscious 'awaken[s] the inherent sense of environmental reciprocity' which is fundamental to human sanity; in contrast, its repression – a psychological barrier, is linked to humanity's environmentally damaging behaviour and 'madness' (Roszak, 1992, 320–321):

> For ecopsychology, repression of the ecological unconscious is the deepest root of collusive madness in industrial society; open access to the ecological unconscious is the path to sanity. (Roszak, 1992, 320–321)

What is emphasized here is the systemic intrapsychic context of individual human subjectivity. An individual's subjective reality is integral to, informed by, and informing the wider system – with 'a flow of information which both transforms and is transformed by the system's organization' (Macy, 1991a, 82). The system is in constant inter-communication with/within itself, e.g. through signs/signals (biosemiotics).

There is an ontology of interconnectedness here, where 'the whole is always in a meta-relationship with its parts' (Bateson, 2000, 267), and where 'the human experience exists in a field of psychic relationships' (Bateson, 2000, 267). The epistemological implication is that those who perceive themselves as separate from the more-than-human world, *not* realizing their self-in-relationship or as interconnected, present psychological barriers against these relationships, leading to nature's signs/flow of information being ignored. This is tantamount to systemic or ecological autism.

Autism is defined as: 'A disturbance in psychological development in which use of language, reaction to stimuli, interpretation of the world, and the formation of relationships are not fully established and follow unusual patterns' (*Encarta World English Dictionary,* 1999). My use of the word *autism* is inspired partly by Metzner's 'The Psychopathology of the Human–Nature Relationship' (in Roszak et al., 1995) and Joanna Macy's observation: 'Where minds interact, they mutually create. Only the autistic are independent' (Macy, 1991a, 186). In object relations theory, according to Mahler there is 'normal autism' over a child's first three to four years. The child experiences a 'symbiotic unity', with its mother, which can be impaired, leading to developmental difficulties. This unity is centred on the child's sensations, with no sense of other/separate, so while there is unity it is without a concept of relation, and so autistic.

So, to sum up, two connections with the ecosystem-mind processes are emphasized.

- *The ecological unconscious: information is exchanged through bodily senses and dreams.* In the fully self-realized person, psychological barriers like repression are dissolved, uncovering the ecological unconscious.
- *Conscious realization of the intrinsic interconnectedness of the individual with the biosphere and its participants.* The psychological process of 'realization' – shifts the self–'other' psychological barrier within the human psyche so that notions (i.e. schema) of inside and outside merge.



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> The realized individual awakens to a co-participatory reality – a shared earth-body, without separation from the surrounding world: 'our relationship to the earth is that of a leaf to a tree . . . we are participants in this planetary system, for good or for ill' (Reason, 2002, 9).

The previously external 'other' becomes internalized as 'self', while the 'inner' world reconnects with the 'outer', nature's psyche/mind/systems through the ecological unconscious (e.g. Kidner, 2001). The result is a strong mental and emotional link with the planet, people defend ecosystems, and the world becomes lover (Macy, 1991b). However, this reconnection also leads, to the ecological-self feeling the pain and despair of environmental degradation (Macy, 1991b).

Contrastingly, systemic autism results in alienation from nature (eco-alienation), as the unrealized self perceives themselves as separate (alienated) from 'other' life forms, leading to the various environmental problems occurring today (e.g. Metzner, in Roszak et al., 1995). The resulting lack of 'holistic' or healthy realization can engender addictive and compulsive behaviours, such as addiction to technology (e.g. Glendinning or Metzner, in Roszak et al., 1995). But since the earth is an extension of physical body (from this perspective) and the root cause is psychological, the previously described ecosystem and human sicknesses/diseases and illnesses, can be viewed as psychosomatic or eco-psychosomatic. 'Psychosomatic is a term that refers to the inseparability and interdependence of the psychological and biological aspects of humanity. This connotation may be referred to as holistic, in that it implies a vision of human beings as a totality, a mind–body complex immersed in a social environment' (Ramos, 2004, 167). Ecopsychosomatics extends this concept to include the earth-body and one's human ecology.

Unfortunately, there is insufficient space here to cover the ecofeminist critique which informs of the privileging of 'self' as active-masculine, leading to the exploitation, oppression, and domination of 'other' as passive-'feminine'. While deep ecology critiques the perception of 'other' as an exploitable/instrumental commodity, ecofeminism critiques patriarchal oppression, where perceived 'other' is exploited/dominated as 'feminine' (*see* Merchant, 1983; Warren, 2000). This paper focuses on connecting to 'active' nature, with the deep ecological emphasis of 'Other' as 'Self'. There is an implicit assumption that exploitation would not occur in self–self or subject–subject relations, that is, others are perceived as self with equal value and intrinsic worth. Although I recognize this as an important area, it is outside the scope of this paper to debate how this might occur in practice, taking issues of control and power dynamics into account.

## METAPHORS THAT CONNECT

The last section has emphasized connection to nature through realization of interconnectedness, self-identification with ecosystems, and the dissolving of psychological barriers. However, Bateson argues that human-consciousness with its goal–purpose orientation '(unaided by art, dreams, and the like) can never appreciate the systemic nature of mind' (Bateson, 2000, 145). Instead he emphasizes the role of metaphors for enabling human minds to harmonize with the mental processes of nature or, to use a metaphor, metaphors allow humans to 'read' nature. Bateson sees paradigms, world views, and religions in terms of metaphors, or 'the patterns which connects' us to the 'bigger picture' (Bateson, 1979).



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*Metaphors We Live By* (Lakoff and Johnson, 1980) concludes that metaphors provide 'the only ways to perceive and experience much of the world. Metaphor is as much a part of our functioning as our sense of touch, and as precious.' Metaphors are 'how this whole fabric of mental interconnections holds together. Metaphor is right at the bottom of being alive.' (Bateson, in Capra, 1989, 79), it 'is the language of nature' (Bateson, in Capra, 1989, 84). Metaphors are therefore a vital way of understanding nature, developing empathy, and engendering ethical environmental behaviour; that is, for engaging head, heart, and hand. The mechanistic metaphor of a machine world is unlikely to engender empathy, compared with the organic metaphor of a health sustaining nurturing and creative agent.

> We can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in. (Leopold, in Warren, 2000, 165)

Elisabeth Bragg's studies have shown that engaging the heart is a key to motivating environmentally responsible behaviour. 'It seemed that caring about nature, for whatever reasons . . . was the essential motivator of environmental action' (Bragg, 1997). Empathy harmonizes the part to the whole; it creates the 'negative feedback loop' within a system to mitigate actions that are systemically detrimental.

I suggest that using the dynamic metaphor of the immune system allows the planet's ecosystems to be perceived as actively protecting life and preventing disease. As, from this perspective, the earth is an extension of the body, its autopoietic systems can be seen as extending personal immunity to disease, helping to develop ecological identification and realization, understanding, and empathy:

> When people consciously understand that they are part of, and *intricately connected to*, the natural world, they will be able to expand their boundaries of empathy to include all. (Feral, 1998, 244)

## GAIA'S ACQUIRED IMMUNE DEFICIENCY

Perhaps using the immune system metaphor would be one way to help some minds and hearts grasp a multitude of variables within one concept, and to understand the autoimmune disease-like role of the 'unrealized' human psyche. The metaphor can be developed further, to suggest that the planet is immunosuppressed with human autism as an autoimmune-like factor, so that GAIA has its own version of AIDS (Acquired Immune Deficiency Syndrome). Such a syndrome with its psychogenic roots can be viewed as eco-psychosomatic.

This eco-psychosomatic syndrome does not need to separate between human and environmental degradation, such as increased pollution, species extinctions, or asthma in humans. All are psychogenic symptoms of an ailing biosphere. This is a systemic metaphor, intrinsically incorporating interconnectivity. As an extension of the ecosystem/land health metaphor, it allows the various ecosystem sicknesses, and subsequent [human/wildlife/ecosystem] diseases, to be seen as a syndrome, affecting the overall health of the system or earth-body and its health-sustaining capability.

It captures the sense of a system under pressure, which can continue to function for a while, until it rapidly collapses. In fact, Haskell uses the term 'distress syndrome' to refer 'to the irreversible process of system breakdown leading to collapse' and 'a diseased system is one that is not sustainable, that will eventually cease to exist' (Haskell et al., in Costanza, 1992, 9). It captures the parasitism of unsustainable, autistic, and



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oppressive human behaviour. This is not an attempt to emphasize a major ecosystem service, but to facilitate realization of humanity's embeddedness within the planet's systems, and to contextualize environmentally damaging behaviour within its autopoietic processes. This paper is emphasizing humanity's failure to *fully participate* within this 'service', from a biocentric position. Humanity needs to realize its own place within ecosystem services, in order to 'serve' or be 'instrumental' to the system as a whole, not just for humanity's sake but the more-than-human, too.

This could give a 'wake-up' call to those who are open to the idea, encouraging a holistic/interconnected world view and environmental reciprocity. Roszak argues that what is required is a positive vision of the future (Du Nann Winter and Koger, 2004, 216–219). Perhaps people might turn off and be depressed by the metaphor of a planet living with a suppressed immune system. However, Macy believes it is important to get in touch with the despair of environmental degradation (Macy, 1991b). Yet, there is a positive message here: that the planet's ecosystems are working together to protect life and that through understanding and empathy humans can benefit from their self-restorative capabilities. Using the compromised immune system metaphor can help people realize their own interconnectedness and the consequences of their actions, allowing them to consciously change their actions, so that a healing can be possible. It is time for humanity to heal, protect, and fully participate in the planet's autopoietic processes.

## CONCLUSION

For such a healing to be possible, I have argued that humanity needs to recognize and reverse its current autoimmune disease-like role, within the earth's immune system-like protection. We have seen that psychological barriers can be dissolved through realization of the ecological-self and extended empathy, breaking through humanity's ecological autism to reconnect with nature's psyche/mind-like processes. The connective role of metaphors was emphasized, and I have argued that the metaphors of the immune system and immune suppression could help humanity to understand and empathize with a living earth that is actively protecting life against disease, since 'Seeing the Earth as a living being helps us identify with its . . . wellbeing' (Du Nann Winter and Koger, 2004, 196).

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