

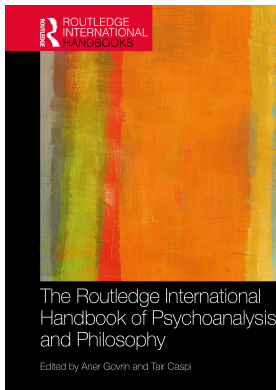
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Aner Govrin, Tair Caspi

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Joseph Dodds

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ECOPSYCHOANALYSIS AND CLIMATE PSYCHOLOGY

Joseph Dodds

Introduction

Climate change and the ecological crisis in general are increasingly recognized as perhaps the single biggest threat to have faced our species, but existing approaches largely constitute an ‘ecology without psychology’. Psychoanalysis has a unique role to play with its emphasis on the unconscious dimensions of our mental and social lives, and is required to unmask the anxieties, deficits, conflicts, phantasies and defences crucial in understanding the human dimension of the ecological crisis, and to our civilization’s highly ambivalent relation to the nonhuman world. Psychoanalysis has long explored the connection between psyche and world, beginning with Sigmund Freud’s writings on nature and civilization and also the early case histories where the ‘animal’ is omnipresent. However, psychoanalysis has remained largely a ‘psychology without ecology’, mostly limited to explorations of the ‘environment’ of the family. This is now thankfully beginning to change, and the time for opening out psychoanalytic theory into a more fully eco-psycho-social perspective is ripe. Ecopsychology has emerged to deal with this blind spot, but it runs the risk of idealizing and mystifying ‘Nature’, a danger Lacanian and postmodern approaches aim to deconstruct through an ‘ecology without nature’. Taken too far, the latter leads to nature dissolving entirely into the human, all too human, realm of the signifier.

This chapters gives an overview of the development of *ecopsychanalysis*, a new transdisciplinary approach to thinking about the relationship between psychoanalysis, ecology, ‘the natural’ and the problem of climate change, as well as viral pandemics such as COVID-19. It draws on a range of fields including, psychoanalysis, psychology, ecology, philosophy, science, complexity theory, aesthetics and the humanities. To do this, it is important to identify the different developmental lines and research traditions out of which ecopsychanalysis is emerging. These include psychoanalysis first and foremost, but also ecopsychology (Roszak 1992; Roszak *et al.* 1995; Buzzel & Chalquist 2009; Rust 2008; Rust & Totton 2012; Winter & Koger 2004) and ecological thinking more generally; cybernetics and systems theory beginning with Gregory Bateson (2000, 2002); complexity theory and nonlinear dynamics; philosophical approaches to nature from deep ecology to post-nature and the new materialisms; postmodern and posthuman understandings of animality, human and nonhuman (Derrida 2008; Dodds 2012b, 2020a); the work of the Climate Psychology Alliance (Hoggett 2019); and the geophilosophy of Deleuze and Guattari (2003).

While some psychoanalysts after Freud were interested in a limited sense with our relation to the nonhuman world (such as Winnicott's transitional object), this trend was not really developed before the work of Harold Searles in the 1960s and 1970s with his writings on the non-human environment (1960) and the environmental crisis (1972). Searles' writings still constitute some of the clearest in psychoanalytic thought on our relation to nature, although unfortunately they remained largely ignored in the following decades. With the new millennium, the awareness of the climate crisis brought a sense of urgency to psychoanalytic approaches to ecology with a cluster of important books and articles (Randall 2005; Dodds 2011, 2013; Weintrobe 2012; Lertzman 2015; Hoggett 2019), an increasing interest in psychoanalytic organisations in this area, and the formation of the Climate Psychology Alliance, which attempts to create a community of psychoanalysts, psychotherapists and psychologists working on issues of ecology and climate change.

The climate crisis is also a crisis of theory. Academia has divided human thought into a schizoid fragmented space, but climate change (and global pandemics) forces us to think transversally, about a world of unpredictable, multiple-level, highly complex, nonlinear interlocking systems. There is therefore a need for a way of thinking able to integrate the disparate strands of analysis, related to what Bion (1984) calls the work of linking, connected with the alpha function and the dreamwork. Bion describes building links between mental objects, and the attack on linking characteristic of psychosis. When 'alpha-function' is compromised, we are left with undigested fragments of experience: 'beta-elements' incapable of being woven into the tapestry of our psychic landscapes. We require a means of linking diverse elements together without losing their specificity, able to connect our minds to what Searles (1960, 1972) referred to as the 'non-human environment', both synchronically (webs of interactions at a given moment in time) and diachronically (e.g., the interactions over evolutionary deep time). In his book *Chaosmosis*, Guattari (1995, 91) called for a generalized science of ecosystems or 'ecosophy', a generalized mechanics with "resonances, alliances and feedback loops between various regimes, signifying and non-signifying, human and non-human, natural and cultural, material and representational." Dodds (2011), argues that there is as much a need to bring nonlinear and ecological thinking into psychoanalysis as for a psychoanalytic approach to ecology, taking seriously the possibility of thinking in terms of what Guattari (2000) called in his final book, *The Three Ecologies*: the ecologies of mind, nature and society.

Scientists estimate that human demand may "have exceeded the biosphere's regenerative capacity since the 1980s" and already reached 120% by 1999, and this demand is still rapidly increasing (Wackernagel *et al.* 2002, 926; Norgaard & Randers 2002). Whether we make the conscious choice to live sustainably or not, this must come to an end one way or another. Science has grown up largely working with the concept of linear systems, but it is increasingly apparent that linear relationships represent merely a special minority case in an otherwise fairly non-linear world. *Attractors* are points towards which a system tends to converge. Wherever you place a marble in a washbasin, the marble will roll toward the 'plug hole attractor'. Any variation in starting point within the *basin of attraction* is cancelled out by the powerful pull of the attractor. Within limits, as our body or global climate temperature increases, negative feedback processes act to draw the system back to a more central point, the *point attractor* (other more complex attractors include 'periodic' attractors and 'strange' or 'chaotic' attractors). However, when the marble is moved to the edge of the basin, the slightest movement or air vibration can move it either back into the basin (of attraction) or into a completely different attractor (falling out and rolling on the floor). At these *bifurcation* points, non-linearities rule as the slightest difference in starting conditions or tiniest fluctuation causes a radical shift, a *phase transition* to a new attractor or set of attractors.

Scientists suggest our climate may be approaching several such tipping points (Sawaya 2010), or has begun to cross them, with potentially lethal *positive feedback* processes no longer capable of being damped out (involving social and psychological systems, as well as ecological, climatological and geological ones). A nonlinear perspective is crucial not only for climate science but for the psychology of climate change. Our familiar ways of thinking assume a linear relationship between CO₂ emissions and a warming, that there will always be time later to turn it around. This is a failure in our mental ecology which leads, via pathological forms of social ecology, into potential catastrophic collapses of natural ecology.

Psychoanalysis and Climate Change

Freud (1927) claimed civilization arose to defend us against nature, but that the aim of achieving total control over either our inner nature or the outer world was a dangerous illusion to defend against feelings of helplessness and fear in the face of the awesome power of mother nature, of acknowledging dependency on this largest of ‘holding environments’, the ultimate ‘environment mother’ (Winnicott 1987). Freud’s ‘eternal adversaries’, Eros and Thanatos, are unfortunately unlikely partners in their destructive effects on nature. The ‘nirvana principle’s’ desire for non-existence/annihilation can be seen in our virtual indifference towards the world’s sixth great mass extinction and in the attraction of apocalyptic rhetoric for the environmental movement (Hoggett 2011) and recent ‘eco-disaster’ films. For Žižek (2007) “‘The world without us’ is . . . fantasy at its purest: witnessing the Earth itself retaining its pre-castrated state of innocence, before we humans spoiled it with our hubris”. Eros, through over-consumption and overpopulation, also works towards the potential collapse of the biosphere (Bigda-Peyton 2004). However, in the form of ‘biophilia’ (Wilson 2003), Eros can work to reinvigorate our love of nature, which may help us turn back from the brink.

To explore climate denial further, we can turn to a joke Freud (1905, 62) used to illustrate the logic of the unconscious (Freud 1911; Matte-Blanco 1998). When a man is told he should replace a pot he borrowed and returned damaged, he refuses, claiming (1) I returned it undamaged; (2) the hole was there when you gave it to me; or (3) I never borrowed it! These mutually contradictory answers alert us to unconscious processes united by the motivation to remove the blame and prevent need for action, and correspond well with arguments against action on climate change.

- 1 *There’s nothing wrong with the climate kettle* (here climate change is seen paranoiacally as a conspiracy to destroy our freedom or instead of capitalists trying to stop poor countries developing). Alternatively, ‘the evidence is not conclusive’, which involves playing Russian roulette with the entire planet.
- 2 *There was a hole in the planet when you gave it to me* (not caused by humans, or caused by other humans – either way, not-me, not my problem). However, unconscious deflection of guilt does nothing to stop the disastrous consequences of climate change, so we would still need to take urgent action. One psychoanalytically interesting conclusion is at times people can fear guilt more than their own, or everyone’s, destruction.
- 3 *There is nothing we can do about it*, also found in burnt-out environmentalists filled with feelings of despair and disempowerment, allowing us to give up thinking.

The different arguments relate to defences against specific anxieties. *Its not happening* involves more psychotic defences against paranoid-schizoid anxiety (extinction, annihilation). *Its not our/my fault* involves neurotic defences against depressive anxiety (difficulty in acknowledging human

culpability and guilt). *There's nothing I/we can do about it* is closest to recognising the problem but without realistic reparative possibilities the individual is stuck with the despair and pain of the depressive position without hope. As Searles (1972, 366) put it, “instead of feeling isolated within emotional depression, one feels at one with everyone . . . in a ‘realistically’ doomed world.” Such defence mechanisms need to be understood not only individually, but as involving unconscious alliances (Kaes 2007) created socially, through small interactions at all levels giving rise to *social phantasy systems* (Jaques 1955). In complexity theory this is an example of *self-organization*, where lower levels interact to form higher-level structures embodying emergent properties which then feed back to lower levels in a process of ongoing recursivity.

Object Relations and Ecological Relations

Object relations, emphasising the self as constituted in and through relational webs, moves psychoanalysis in an ecological direction. Development involves moving from ‘absolute dependence’ to ‘mature dependence’ (Fairbairn 1992), suggesting a vision for a more mature culture, with self and society seen as inextricable from its relations to other beings, to ecological webs, and to the Earth. For Searles (1972, 368) “an ecologically healthy relatedness to our nonhuman environment is essential to the development and maintenance of our sense of being human”, which has become “so undermined, disrupted, and distorted, concomitant with the ecological deterioration, that it is inordinately difficult for us to integrate the feeling experiences, including the losses, inescapable to any full-fledged human living”.

Traditionally, psychoanalysts would analyse environmental concern as reflecting ‘deeper’ feelings relating to human ‘objects’, but human conflict could equally be a displacement from anxiety concerning the environment. If we broaden Winnicott’s ‘holding environment’ to include the holding environment of the Earth, we can understand how the enormity of the crisis can threaten psychological disintegration and collapse. Furthermore, not only is environmentally damaging behaviour a form of addiction (e.g., consumer items functioning as Kohutian self-objects to shore up a fragile self; Kohut 1985; Winnicott 1999, 1987), but addictions can also arise to deal with anxiety concerning our damaged world (Bodnar 2008; Dodds 2021). Psychoanalysts need to recognise engagement with ecology is not only for ‘applied’ psychoanalysis but is crucial to its core clinical domain.

The phrase ‘Mother Earth’ suggests our experience with the planet relates to our experience with our (m)other. Not only feelings of love and being held, but phantasies of an infinitely giving Earth-breast we feel entitled to suck on with ever-increasing intensity without limit. Unable to tolerate weaning, our response to ecological crisis includes rage, envy and destructiveness, including spoiling and omnipotent attacks on the earth-breast. Meltzer’s (1967) ‘toilet-breast’ concept is useful here. Psychologically the breast is not only a provider of nutrition but a place where we expel unbearable states of mind.

Various developmental levels may intersect with our problematic relationship with nature (Randall 2005). The apocalyptic threat of climate change may evoke the extremely primitive persecutory anxieties of Klein’s paranoid-schizoid position, leading to omnipotent defences to protect against feelings of helpless and fragmentation (Jordan 2009). The paranoia surrounding climate change allows the “bad sadistic enemy” to be fought against “not in the solitary isolation of the unconscious inner world, but in co-operation with comrades-in-arms in real life” (Jaques 1955, 483). Searles (1972) points out that ironically there is now a certain objectivity to schizophrenic ‘end of the world’ fantasies. This can lead many to intuitively feel ecological warnings are ‘crazy’ and we shouldn’t listen to them, partly out of fear of contamination because they touch a ‘crazy’ part of all of us.

At the phallic-Oedipal level, Searles (1972, 364) identifies phantasies of eliminating Oedipal rivals (including future generations) and the ‘moralistic’ tone of much ecological writing involving projecting Oedipal guilt, accusing us of raping mother earth. In addition, through relentless advertising, possessions such as cars have become symbols of (male) genital achievement, and initiatives to reduce car use can feel like castration (Randall 2005). The ecological version of Klein’s (1987) depressive position involves mourning for environmental destruction, guilt for the damage done, a growing awareness the lifestyles and civilization we are so proud of are causing such damage to planetary ecosystems, and a reparative drive to restore, repair and recreate the lost and damaged world (internal and external).

The environmental crisis forces us to face the traumatic aspects of transience, that nothing is permanent. Drawing on Freud’s (1916) concept of anticipatory mourning, we might expect individuals and societies to adopt positions of consciously not caring about the environment or even our species survival, or becoming actively destructive and self-destructive, as a defence against the mourning yet to come. Alternatively, we may engage in a premature anticipatory mourning, falling into a despair preventing the very action which might avoid the feared loss, while there is still time. Freud (1916, 306) urges us to face with honesty and courage the fact that

[a] time may indeed come when the pictures and statues which we admire to-day will crumble to dust, or a race of men may follow us who no longer understand the works of our poets and thinkers, or a geological epoch may even arrive when all animate life upon the earth ceases.

Randall (2009) argues that loss is central to our response to climate change, as which is processed through two parallel narratives, one about the *problems* of climate change (where loss features terrifyingly but located to a future or a place far from contemporary Western audiences) and the other about *solutions* to climate change in which loss is excised. This split narrative allows an inner split avoiding the required work of mourning and grief.

In the face of the enormous pain and fear the ecological crisis evokes, there is a need to find effective means of reparation, to restore and recreate the damaged world, inside and out. Without hope that meaningful, as opposed to manic, reparation is possible, there is only the choice between denial, madness and despair. As psychoanalysis opens itself up to a greater awareness of the web of life, the object-related self and the narcissistic self need to be viewed as developing alongside the ecological self.

Biophilia and Biophobia

While ecopsychology in its classic form is in danger of creating a new religion, there is much of value within the tradition, so we shall see what symbioses can occur in this ecology of ideas. Where Freud saw the oceanic feeling as “something like the restoration of the limitless narcissism”, Roszak (in Roszak et al. 1995, 12) instead sees it as reclaiming the repressed of the ecological unconscious. This is connected to what the zoologist E.O Wilson calls ‘biophilia’: “the innately emotional affiliation of human beings to other living organisms” (Kellert & Wilson 1993), a consequence of our long evolution and adaptation to the natural world and for Wilson (2003, 137) a crucial force in countering the biodiversity crisis. Wilson’s biophilia is something that can be learned, encouraged and developed, especially during the crucial stages of child development of such interest to psychoanalysts. He goes on to describe the stages of the acquisition of biophilia which can be interestingly compared to Freud’s work on children’s relations with animals (Genosko 1993; Dodds 2012b). Although Wilson does not say this, in some ways

we could describe our culture as remaining stuck within the first stage of the development of biophilia.

The critical states in the acquiring of biophilia have been worked out by psychologists during studies of childhood mental development. Under the age of six, children tend to be egocentric, self-serving, and domineering in their responses to animals and nature. They are also most prone to be uncaring or fearful of the natural world and of all but a few familiar animals. Between six and nine, children become interested in wild creatures for the first time, and aware that animals can suffer pain and distress. From nine to twelve their knowledge and interest in the natural world rises sharply, and between thirteen and seventeen they readily acquire moral feeling toward animal welfare and species conservation.

(Wilson 2003, 137–138)

The secret places of childhood (Sobel 2001), such as hedges, nearby woods and streams, abandoned buildings, connect us to place, and help in our psychological development, “if played out in natural environments, they also bring us close to the earth and nature in ways that can engender a lifelong love of both”. However, if we accept that biophilia is an innate tendency in human nature, we must also accept the possibility, or even the likelihood, that ‘biophobia’ is just as natural. This is a subject that ecopsychologists are often conspicuously absent in addressing. This deep acceptance of the ambiguity of our relationship with nature found in Wilson, is something perhaps Freud would have appreciated. As Wilson (2003, 141) writes “the reverse side of nature’s green-and-gold is the black-and-scarlet of disease and death”, something the coronavirus pandemic is reminding us all too clearly. Biophilia and biophobia can be understood as the ecopsychological equivalent of Freud’s (1920) Eros and Thanatos.

Ecopsychology, Ecotherapy and Health

Ecopsychologists have been interested in studying the psychological impacts of life in an age of ecological crisis. Heinberg (2009, 198) suggests that in this context we need also to consider the idea of *eco-grief*, the feelings of loss connected to ecological devastation and the threatened loss of a whole way of life, which one way or another is about to come to an end, in what he calls *pre-traumatic stress disorder*, related in many ways to Freud’s (1916) anticipatory mourning. He suggests a psychological approach using the stages of grief described in the Kübler-Ross (1973, 2005) model (denial, anger, bargaining, depression, acceptance) to understand where we are as a society and as individuals. From this perspective, different types of interventions might be more or less “effective for helping people accept our situation, depending on their current stage of adjustment” (Heinberg 2009, 198). He suggests, however, that the classic stages are not enough, because beyond acceptance there needs to be action, not only due to the ecological urgency, but because accepting “the reality all too often leads to depression and despair”.

Although Santostefano (2008) cautions us against a naïve version of ecopsychology that assumes nature automatically generates a sense of well-being and improvements in physical and mental health, there does seem to be an increasing amount of empirical evidence to support the contention that nature heals (e.g., Buzzell & Chalquist 2009; MIND 2007). Researchers from the VU University Medical Centre in Amsterdam recently conducted a large study of 350,000 people showing that living near green spaces had substantial physical and mental health benefits (BBC 2009). The greatest benefits were for those living less than a kilometre away and the largest positive impacts were on anxiety disorders and depression. Living near green

areas reduced depression rates by 21% for children under 12. Physical disorders, such as heart disease, diabetes, stomach and respiratory infections, and neck, shoulder, back, wrist and hand complaints, also showed substantial improvements. In addition, research by Ulrich (1984) has shown that the view from a hospital window (whether natural or concrete) has a significant and measurable effect on the speed and completeness of a patient's recovery (Ulrich 1984; Verderber & Reuman 1987), and that pets have significant impacts on physical and mental health. For more information on the health effects of pets and natural environments, see Ulrich (1991, 1999, 2000), Ulrich *et al.* (1993), Ulrich *et al.* (1991), Kellert and Wilson (1993), Frumkin (2001) and Frumkin and Louv (2007).

This has led a number of therapists, including those coming from traditional psychoanalytic backgrounds, to explore the possibility of 'ecotherapy', which covers a wide variety of approaches, including taking psychotherapy outside the traditional consulting room into the outdoors (Buzzell 2009; Rust 2020). Jordan and Marshall (2010, 345) explore the various complex clinical factors involved in such a shift, in particular focusing on its impact on boundaries and the therapeutic frame (as both emotional and geographical space) from a relational perspective. Here, the "relational encounter within the dynamic nature of the natural world can provide rich opportunities for a new experiencing with immediacy for both therapist and client, all of which can be fed in to the therapeutic process" (Jordan & Marshall 2010, 349). Moving outdoors may also enhance mutuality (not identical with equality), given that the space within which therapy occurs is not owned by the therapist, and the process of choosing different terrain can become more a co-created ongoing experience within the therapeutic relationship. Placing therapy outdoors results in the normal static 'backdrop' of therapy becoming "a living presence . . . [where] therapist and client are constantly aware of (both consciously and unconsciously), and responding to, the presence of this vibrant living third in the dynamic" (Jordan & Marshall 2010, 353–354). For a Jungian ecopschoanalytic approach to ecotherapy, see Rust (2020).

Dark Ecology: Ecology Without Nature?

In contrast with the call for reconnection at the heart of ecopsychological theory and practice, Morton's (2007) plea for an 'ecology without nature' uses ecocriticism to deconstruct the ecological imaginary, helping us become more aware of how we use 'nature' psychologically in ways which get in the way of genuine environmental practice. For Žižek, our very idea of 'Nature' is a problem:

there is no big Other (self-contained symbolic order as the ultimate guarantee of Meaning); there is also no Nature *qua* balanced order of self-reproduction whose homeostasis is disturbed . . . by imbalanced human interventions . . . what we need is ecology without nature: the ultimate obstacle to protecting nature is the very notion of nature we rely on.

In our era of global warming, weather (as background) no longer exists, it now becomes a mere cipher for that threatening hyper-object we call 'climate'. Without background the foreground also disappears, and rather than retreating into comforting fantasies of 'Hobbit-like' Heideggerian 'life-worlds', Morton encourages us to embrace *dark ecology* involving a 'melancholic ethics' (see also Dodds 2012a).

However, there is a danger ecocritique can remove a primary motivation of the environmental movement. Discourses of 'nature no longer existing' may feed into psychological defences by arguing that as 'nature' is already so altered by human activity that 'wilderness' doesn't really

exist, there is no reason to protect a nature which has no substance. In addition, this approach can lose sight of the fact that the ecological crisis ultimately reaches beyond any linguistic constructions, and is not itself a 'text' which can be 'deconstructed', but a 'Real' beyond language, traumatically rupturing the Symbolic order. Deconstructive approaches also have difficulty in giving ontological space to nature and the material as anything other than an effect of language, or its negation as the 'Real'.

With their mixed semiotics, Herzogenrath (2009, 3) claims a Deleuzo-Guattarian ecology "allows for the incorporation of the workings of the 'repressed' of representation . . . of the 'real', of 'nature'". According to Bonta and Protevi (2004, 4), Deleuze and Guattari's engagement with complexity theory "helps break free of the postmodernist trap by rethinking sense and reference", shattering "postmodernist equations of signs with signifiers", such that "at critical thresholds . . . physical and biological systems can be said to 'sense' the differences in their environment that trigger self-organizing processes". A nonlinear reading of Deleuze and Guattari offers not with a flight into eco-mysticism, or a naïve positivist reductionism, or even a postmodernist plays of signifiers, but an 'intelligent materialism', a 'geophilosophy'.

Complexity, Chaos and Self Organization

Complexity and chaos theories have strong implications for psychoanalysis (Piers *et al.* 2007) and have "changed the basic concept of the human mind itself" (Guastello 2004, 4), providing a new way of thinking about the three ecologies. Concepts such as 'phase space' embody complex relationships and dynamic processes of change, providing what Deleuze and Guattari call an 'abstract machine', embodying a structural pattern of relationships in many separate heterogeneous domains. For Deleuze and Guattari (2003, 514),

every abstract machine is linked to other abstract machines, not only because they are inseparably political, economic, scientific, artistic, ecological, cosmic – perceptive, affective, active, thinking, physical, and semiotic – but because their various types are as intertwined as their operations are convergent.

Self Organization (SO), deriving partly from for example studies of social insects, occurs when global patterns *emerge* from interactions among lower-level components rather than being imposed from outside the system, or any type of 'leader'. For Palombo (1999, 24), SO is "the most significant missing ingredient in psychoanalytic theory", showing how small pieces of insight self-organise into ever larger structures. This abstract machine embodies a structural pattern of relationships occurring in many separate registers, including the psychological, ecological and social. Gordon (1999), for example, suggests a similar pattern can be found behind "molecular interactions within a living cell, the unfolding pattern of cells and tissues in an embryo, and the activity of the neurons that produce the mind." Any complex system can be viewed as a *morphogenetic cascade*, which can include flows from all registers. Thus we can see how the scientific apparatus of complexity theory, along with the philosophical perspective of Deleuze and Guattari can help to provide a meta-perspective from which to connect the various levels of mind, brain, society, ecology and climate, which this chapter argues is necessary to allow joined-up thinking on the topic of climate change and the psychological dimensions of the ecological crisis.

Climate change is sometimes referred to as 'climate chaos' because of the increasingly unpredictable nature of natural systems. A nonlinear perspective is thus crucial for climate science, but it also provides ways of engaging with the crisis on the social and psychological levels. *Chaos*

theory shows us paradoxically that chaos is far from the opposite of order and structure. Chaos is a feature of all nonlinear systems, which show us that traditional linear approaches to scientific analysis only describe a special case situation within a larger non-linear world. Chaos is essential for SO as the latter involves the amplification through positive feedback of fluctuations created by phenomena such as “random walks, errors, random task-switching” (Bonabeau *et al.* 1999, 10). The fact that ants regularly get lost used to puzzle scientists who wondered why this ‘inefficiency’ wasn’t eliminated by evolution, but lost foragers can sometimes find new food sources, and therefore randomness enhances the creativity of a system or what Bateson (2000) calls its *ecological flexibility*. This is true in psychological, social, biological and even non-living systems.

Similarly, and counterintuitively, studies of electroencephalograms, electrocardiograms and other biorhythmic measurements show *healthy* rhythms have greater turbulence or irregularity (complexity), whereas “unhealthy systems gravitate toward periodic and simplistic output” (Guastello 2004). Chaos also plays a crucial role in brain dynamics (Grigsby & Stevens 2000). Kelso’s (1995, 26) work suggests that the brain

is a self-organizing, pattern-forming system that operates close to instability points, thereby allowing it to switch flexibly and spontaneously from one coherent state to another . . . by living near criticality, the brain is able to anticipate the future, not simply react to the present.

This can be understood as a dynamic interplay between Deleuze and Guattari’s (2003) deterritorialization/territorialization systems in constant flux.

We can also see examples from birds of what Deleuze and Guattari (2003) call the territorializing effects of the familiar. Sole and Goodwin (2000, 138) explain how “chaotic [brain] dynamics . . . represented the normal state when the animal was attentive” but that “these attractors underwent dramatic changes when some familiar odor was introduced”, resulting in much more ordered neural fluctuation. The spatiotemporal pattern “exhibited a well-defined stable structure . . . characteristic for the specific odor”. On the emotional level, Jaak Panksepp (2004), argues that the basic emotion systems in the mammalian brain form *attractor landscapes* involving vast assemblages of neurones operating at far-from-equilibrium states. Paradoxically, the nonlinear processes of chaos give rise to stability by allowing the system to creatively adapt to environmental change, something increasingly urgent in our current crisis.

We can understand more fully the function of chaos through its border with more stable states, a region called the *edge of chaos*. Living systems attempt to balance themselves on the fractal borderzone between stability and instability which provides maximum ecological flexibility, producing the *dissipative system* of life. Dissipative systems are open systems in constant reciprocal interaction with and adaptation to their environments and exist at *far-from-equilibrium* conditions where they can maintain themselves within a dynamically ordered structure. This is a fundamental challenge to long-held Western philosophical and scientific views on the relation between order and chaos, as order arises from chaos in a specific scientific sense. This principle can be seen as valid in all three of Guattari’s three ecologies of mind, society and nature and has been applied to phenomena as far apart as organizational behavior (Dooley 1997) and communication dynamics within families (Pincus 2001). As Guastello (2004, 6) writes, “The general principle is that the organism is a complex adaptive system, and that the turbulence or complexity in its behavior allows for the broadest range of adaptive responses”. With chaos, biology becomes no longer the ‘bedrock’ on top of which separate psychological and social worlds form, because the brain is itself formed through nonlinear interactions with the world (Edelman 2006).

In the clinical domain, Busch (2007, 429) describes pathological infantile attractors as “*black holes in psychological space*, sucking in everything in that comes near its orbit, remaining outside of awareness and thus unable to be modified by other structures.” Psychoanalysis can be understood as a *coevolutionary system* (Palombo 1999), a ‘destabilization’ of such attractors in psychic space, changing point and periodic attractors to chaotic attractors. While most change is confined to the local level and absorbed by wider psychic defences, as the system reaches *self-organized criticality* (Bak 1994) the tiniest local shift can precipitate cascades of disorder through the entire system. Such models of dynamic change are also crucial for understanding the psychological and social shifts in human responses to ecological crisis. In social ecology and group analysis, Stacey (2003, 2006) argues that Bion’s (1961) work group and basic assumption groups interact to create regions of stability and disintegration, with potentially creative fractal regions of bounded instability at the edge of chaos between them. Nonlinear fractal geometry undermines any clear line between inside and outside, providing new ways to think about the individual and group in terms of multidimensional fractal borderzones. Similarly, Jaques’ (1955) social phantasy systems can be understood as emerging through the self-organization of individual defences, with global patterns feeding back to effect lower levels recursively.

Ecopsychanalysis, Geophilosophy and Dynamics of Change

For an example of a nonlinear social phantasy ecosystem in climate change, we can turn to Randall’s (2005) discussion of the non-active majority that projects environmental concern onto activists functioning as containers for the split-off collective environmental superego. A nonlinear, social systems perspective lets us explore the affective feedback loops carried around the circuit with complex social and psychological effects, as projective and introjective identifications, splittings and scapegoating, reverberate back and forth in new iterations as the system moves forward in time, as other individuals and groups get drawn in, either damping the mad oscillations (Bion 1961) or getting swept up in nonlinear amplification effects. Randal (2005, 176–177) suggests that as collective guilt becomes more shared, it can be “managed in more creative ways”, becoming “less persecutory and destructive”, where projections are reduced and a larger non-psychotic space created for reparative action. This embodies a system of multistability, with complex movements between basins of attraction as internal objects and affects flow through the network, with major shifts between states, sometimes after long periods when the system seems stuck despite the best efforts to destabilize it by pushing it towards a bifurcation.

We can see our current period as showing disorder and instability in some areas, while seeming stuck and frozen in others. The first can feel frightening, the latter deadening and demoralizing (Marks-Tarlow 2008). Periods of instability are “natural and necessary stages on the path toward greater self-organization” (Eidelson 1997, 68) but with no guarantee that what emerges will be more adaptive. What this research shows is that in a highly complex and interconnected system, relatively small changes of one parameter can have unpredictable (and disastrous) effects on the whole. This has important implications for the effect of climate change on the social, psychological, climate and ecological systems. This can bring a complexity-based approach to Jared Diamond’s (2006) research on the collapse of civilizations, and the important roles he uncovered for systemic social interconnectivity, environmental damage and climate change. Crucially for us, many of these societies entered the period of collapse shortly after reaching to their apogee of power and wealth. Climate change appears to have played an important part in the rise and fall of many previous civilizations (Buntgen *et al.* 2011). We do not yet know whether our own civilization will share the fate of many that have gone before, but we would do well to grasp the complex nonlinear effects involved.

The task for change, whether in psychoanalytic clinical practice or social or ecological systems, then becomes experimental, including the search for ‘lever points’ to open up the possibilities of more radical transformation. As Deleuze and Guattari (2003, 161) write:

This is how it should be done: Lodge yourself on a stratum, experiment with the opportunities it offers, find an advantageous place on it, find potential movements of deterritorialization, possible lines of flight, experience them, produce flow conjunctions here and there, try out continuums of intensities segment by segment. . . . It is through a meticulous relation with the strata that one succeeds in freeing lines of flight.

Psychoanalytic approaches to ecology have useful practical as well as theoretical applications to a range of fields. Renee Lertzman has been engaging in a fascinating range of psychoanalytically informed research and engagement with industry, organisations and the public. In her book *Environmental Melancholia* (Lertzman 2015) she utilized Dialogic Relational Interviewing to conduct in-depth interviews with people in Green Bay, Wisconsin, to explore their own relationship to nature and their immediate environment, their thoughts about the industry the town relied on, among other questions. She concluded that much of the public dismissed as either apathetic or actively hostile to green concerns are actually deeply connected to and affected by their relation to nature, but that its partly the way such questions are framed that prevents their engagement. Similarly, George Marshall (2015) has been engaging with different organisations and groups and explored the way framing the problem can appeal to differing political and social identities, something Paul Hoggett relates to differing ‘subject-positions’ and the role of affect. Rosemary Randall on the other hand through the ‘carbon conversations’ project and other means seeks to apply psychoanalytic and group analytic methods to understanding and working through barriers to change. Finally, in Dodds (2019a) we can see an engagement between ecopsychanalytic concerns with older pioneering psychoanalytic approaches to the social world (e.g., Fenichel) and developments in the artistic field with combined works with artists to create joint artistic (sculpture, painting, photography) and textual reactions to the contemporary world (Dodds 2019b, 2019c).

Deleuzo–Guattarian philosophy is one of becoming rather than being (DeLanda 2005). Everything, from mountains to bodies to languages, represents structures produced by a temporary slowing down of the vast flow of becoming. Deleuze and Guattari create a vision of a world, according to DeLanda (2006), where “geology, biology, and linguistics are not seen as three separate spheres” but as “coexisting and interacting flows” where “one stratum can serve directly as a substratum for another”. As Deleuze and Guattari (2003, 69) put it, “a semiotic fragment rubs shoulders with a chemical interaction, an electron crashes into a language”. Deleuze and Guattari follow Bateson towards an ecology of mind leading to new ways of understanding subjectivity, where fallacies in the ecology of ideas have direct and catastrophic results on the social and ecological registers such that “there is an ecology of bad ideas, just as there is an ecology of weeds” (Bateson 2000, 492).

In our current ecological crisis, achieving the necessary ecological flexibility to survive requires a fundamental re-examination of the basic coordinates of our lives. As with the fitness landscape of evolutionary theory, deformed and morphed with each shift in the environment, or the patient stuck on a local optimum, unable or unwilling to cross the threshold to a more adaptive peak, entire species and civilizations have in the past found themselves in dangerous dead ends; including those within the ecology of mind, ways of thinking and being that become pathological if they fail to evolve along with the constantly shifting relations in the constitution

of natural and social ecosystems. The contribution of psychoanalysis is to help us overcome such errors of thought through investigating their unconscious roots.

Animality and Virality

Dodds (2012b, 2020a) explores the idea of the animal from an ecopsychanalytic perspective. The animal has long been a symbol of human psyche and culture, from fairy tales to horror films, Oedipal pets to animal phobias, scapegoating and large-group symbols, philosophy to ideology and myth. Drawing on Deleuze and Guattari (2003), three animal-types (Oedipal, mythic and wild) are identified, and these are placed within Guattari's 'three ecologies' of mind, society and nature, seen as in constant, complex nonlinear interaction with one another. The nonhuman animal extends back to the origin of psychoanalysis (e.g. Freud 1909) with Freud's clinical writings on the rat man, the wolf man, and Little Hans' horses, as well as his cultural writings on the origin of religion and civilization. In both, animal phobias and totems involve displacement of Oedipal anxiety onto the animal substitute. Animal symbols also function in the social ecology of groups (Volkan 2000; Dodds 2012b) as both totemic large-group symbols (British Lion) and 'suitable reservoirs' for archaic aspects of self to 'dehumanize' the enemy during scapegoating and intergroup violence (rat, cockroach). However, prior to humans being forced to take on animal characteristics (dehumanization), first the animal must take on rejected and projected human attributes (deanimalization), with genocidal and ecocidal violence on both sides of the border.

Ecopsychanalysis interest in the nonhuman-human connection has also been applied to the complex way societies and psyches have responded to the coronavirus pandemic. The resulting anxiety, defence, conflict, effects on clinical practice, facing the possibilities of extinction and death can be fruitfully compared and contrasted with similar responses and reactions to climate change. In "Elemental Catastrophe: Ecopsychanalysis and the Viral Uncanny of Covid-19", Dodds (2020a) suggests that the virus exists in the uncanny space between life and death, and through anxiety and denials it forces us to become aware in a very literal way of the vast connections between mind, nature, society, ecology and economy. These are no longer abstract but more directly experienced. The viral uncanny may be productive as well as terrible, by calling into question traditional binaries, breaking down old assemblages and building new alliances. This turbulent period may perhaps offer what Morton (2010) calls the 'ontological upgrade' required for this human story to continue into the future. The dangers of COVID-19 are all too real and need to be struggled against, but at the same time they have led to more carbon reductions than all the global summits put together, providing a chance to pause and rethink. The fixed certainties forming the unchangeable background of our societies and economies have proven more mutable than we imagined, giving rise to tremendous anxiety but also a fragile hope, as new forms of connections become possible, putting the world into a chaotic flux without any guarantee of where it will lead.

To conclude, ecopsychanalysis is an emerging transdisciplinary approach, positioning psychoanalysis and human experience in a wider ecological space with relevance to clinical practice, as well as applications outside the clinic, and helping to understand the complex and sometimes chaotic world we live in.

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