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Abstract	Describing the mental health implications of our current planetary ill-health, and exploring first-person narrative, this chapter argues that each of us is either within or between disasters, and that it is the responsibility of those who are between disasters to be working on programs of climate mitigation, climate adaptation, and reckoning with reality. The psychological containment of climate change information and experience is understood as a crucial aspect of global health. The realities of climate change as a complex "wicked" problem are used to illustrate its hopeful aspects in both the butterfly effect and in possibilities for "emergence." The appropriateness of our involvement is described practically, ethically, and as secondary to the functioning of complex systems. The *ethical co-benefit* of addressing climate change and other environmental degradation involves the necessary expansion of one's circle of concern.	
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Global Mental Health, Planetary Health, and the Ethical Co-Benefit

22

Janet Lewis

Introduction

In my job as a psychiatrist, an exchange I have had with patients more than once has gone like this:

I'm drawing the patient's attention to some aspect of their situation that they are ignoring.

Then the patient says, only half-jokingly, "Hey, whose side are you on, anyway?"

And then I say, "I'm on the side of reality."

Our job in the mental health professions is helping people to function better and be more fulfilled within and in relation to reality. To do our jobs within the mental health professions, we have to understand both the patient and reality. We then help the patient deal with, influence, and hopefully thrive within reality.

Now we are all facing the question of what does it mean for our work, and what does it mean for the mental health professions, when reality includes human-made destabilization of the climate and other environmental degradation. This question has additional relevance when we consider global mental health.

Our Dilemma

It is now becoming urgently clear that global mental health is intimately connected to planetary health and that furthermore the biosphere which is our planet is experiencing ill-health, as a result of human activity. The burning of fossil fuels and animal agriculture are most responsible for the recent global heating which has destabilized our climate system. This is discussed at length by the Intergovernmental Panel on Climate Change and throughout respected medical journals (e.g., [18, 20]).

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Our understanding of climate change has an over century-long history [23]. In 1896, Swedish scientist Svante Arrhenius, as part of a theory designed to explain the Ice Ages, predicted that the burning of fossil fuels, by adding carbon dioxide to the atmosphere, would raise the planet's average temperature, in what we now call a "greenhouse effect." Whereas much solar radiation normally reflects off the Earth and back into space, carbon dioxide in the atmosphere traps the infrared portion of that energy, further warming the Earth. In the 1930s it was apparent that the Northern Atlantic and the United States had warmed, but it was thought to be part of a natural cycle. In 1960, very detailed measurements by C. D. Keeling showed that the level of carbon dioxide in the atmosphere was in fact rising. As the understanding of the complexity of the climate system and its feedback loops grew, it became apparent that small perturbations could prompt great shifts. It was also discovered that levels of methane and other "greenhouse gases" generated by human activity were rising. Then in the 1980s and 1990s data from the trapped CO_2 in Antarctic ice cores proved Arrhenius and the developing computer models to be correct. Carbon dioxide and temperature have been linked over hundreds of thousands of years, with a rise or fall in one corresponding to a rise or fall in the other. Simultaneously some corporations and individuals who opposed government regulation invested millions in advertising, lobbying, and scientific-looking "reports" designed to convince the public and lawmakers that global warming was not a problem. The link between human carbon emissions and rising global temperatures had been well established, however, two other factors, taken together, created room for nearly endless debate, delaying public acceptance of climate science. These were the complexity of climate science itself and the psychological difficulty inherent in accepting climate change.

Because of rising global temperature, the Intergovernmental Panel on Climate Change was formed and it issued its first report in 2001, which had to be cautiously phrased so no government representative would dissent, but which confirmed that it was very likely the world faces severe global warming. It is now scientific consensus that climate change is happening, is very serious, is largely human-caused, and that there are things we can do about it.

Climate change attributable to human greenhouse gas emissions is causing and predicted to cause worsened:

- Disasters – storms, floods, heat waves, wildfires, droughts, sea level rise
- Food and water insecurity
- Migration of vector-borne diseases, increased harmful algal blooms
- Forced migrations and violence
- Resultant increased psychological trauma from all of the above

Heat itself is now associated with both violence and suicide [1, 6]. Furthermore, we can expect the transgenerational transmission of these traumas, whereby the progeny of those affected can, by various psychological, social, epigenetic, and hormonal mechanisms, also be affected [2, 19, 25, 26].

In examining planetary health it becomes clear that manifestations of planetary ill-health, most urgently climate change, but also plastics in the oceans and other

ecosystems, air pollution, pesticides, and other toxins, the massive die-off of insects, the sixth mass extinction we are currently undergoing, are all symptoms of a more overarching issue which is essentially relational. Therefore, our understanding of and approach to planetary health must be layered, much like a clinical case of an eating disordered patient whose potassium level is so dangerously low her heart might stop. We would recognize her overarching issues as behavioral, cognitive, and relational, even as we most urgently focus on correction of the life-threatening potassium. Similarly, with regard to planetary health, we are most urgently concerned with climate change because it threatens planet-wide catastrophe if not immediately addressed. However, we know all planetary health issues are related. We know we are not facing a choice between focus on the elimination of greenhouse gas emissions, preparation for climate change impacts, or better orienting ourselves to our real relationship with the living biosphere. Rather we recognize the nested nature of these problems.

The pediatrician and psychoanalyst Donald Winnicott famously said there is no such thing as an infant, there is only a mother and an infant [22]. Similarly, we now see there is no such thing as a human being; there are only a human being embedded in the living biosphere, "Mother Earth," inextricably connected both to Her and through Her to each-other. It is now clear that we are all in the same boat. In order to address climate change, developing countries must skip over fossil fuels, countries with rain forests must be economically capable of preserving them, and so all of us must concern ourselves with distant others. The overarching relational issue of planetary health is about the quality of humanity's relationship with the natural world and it is about the quality of humanity's relationship with itself.

The Ethical Co-benefit and Climate Inequity

In addition to layers of problems, there are also layers of co-benefits in the addressing of these problems. Health co-benefits of addressing climate change are now widely discussed. These include the elimination of diseases due to air pollution and better health from more active transport (walking, bicycling) as well as improved mental health and resilience resulting from necessary coming together in community for climate adaptation work (e.g., [27]).

Could an additional co-benefit of addressing climate change be an ethical one? Many systems of moral development recognize expanding circles of concern as the hallmark of moral development. In order to successfully address and prepare for climate change, an ultimately world-centric focus is now not only ethical. It is practical.

Whereas much mental health discussion about climate change discusses defense mechanisms and becomes a discussion about climate denial and what is wrong with us, we can benefit much more from a discussion about what is right with us. Almost all humans care for others beyond themselves and also have the capacity to even further extend that care. In addressing climate change and other manifestations of planetary ill-health, we are aiming for a future that has these advantages – a coming

together to work for our collective health and the ability to attend realistically to our relationship with the natural world. Recent climate communications research indicates that, in addition to valuing scientific and economic advancement, the public values a more moral and caring community as a potential outcome of climate work [3].

As many writers discuss, we are all currently emerging from various degrees of denial about climate change (e.g., [21]). Part of what we are awakening to is a disturbing situation of inequity wherein the burdens of climate change are being, and are expected to further be, disproportionately borne by the populations of the world who have been least involved in the generation of greenhouse gases (Fig. 22.1). AU1

The first map above illustrates regional carbon dioxide emissions for the years 1950–2000, illustrating the large contribution to atmospheric CO_2 by developed nations. The second map describes the estimated distribution of climate-related increase in mortality from diarrhea, malaria, inland and coastal flooding, and malnutrition from 2000 to 2030. The relative size of each region represents the increase in fatalities from these causes attributable to climate change for each region during

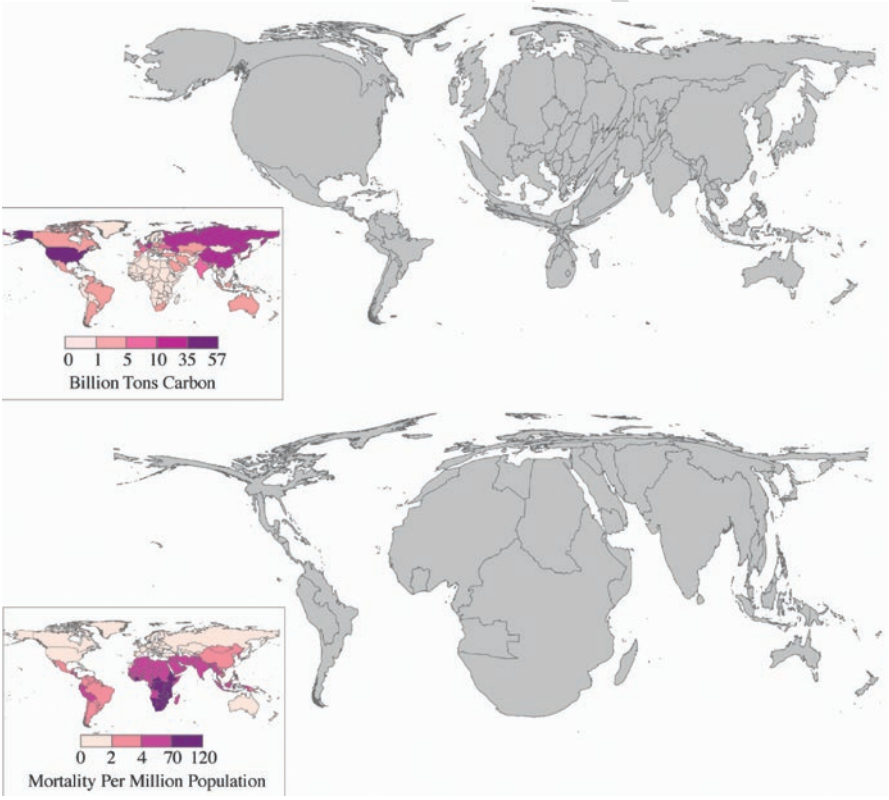

Fig. 22.1 Global CO_2 Emissions and Health Impacts

that period, illustrating the vulnerability of resource-limited regions to climate health effects. (Reprinted with permission from Patz et al. [15])

Extending our care more consciously to global health will create a beneficial feedback loop. Opening to "them" is opening also to the reality of us, the reality of what we are all facing. If we take more seriously the suffering in developing countries, we would act more quickly on climate change which would ultimately be beneficial to all of us. Climate awareness produces ethical awareness which produces greater climate awareness. (repeat) It has been said that people either come to be concerned about climate change because of social justice awareness or they come to concern about social justice because of environmental awareness [16]. In either case, one's circle of concern is expanded, which can be seen to be an ethical co-benefit.

Mitigation and Adaptation/Resilience

Literature in all fields relating to climate change describes two crucial aspects of our healthy response to climate change – mitigation and adaptation.

Mitigation is reducing the severity of something, it is *avoiding what can be avoided*.

NASA defines mitigation as "Reducing emissions of and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere" (https://climate.nasa.gov/solutions/adaptation-mitigation/).

Why should mental health professionals work on mitigation in our activities? There are two reasons. In the 1960s, cigarette companies had ads that depicted doctors smoking. When clinicians act as though it is business as usual and do not change their own behavior, it sends the implicit message that the behavior is not really a health issue. Even though one's own behavior is easily thought of as a drop in the bucket, it has additional power because it helps to change culture. The second reason is directly practical, in that the carbon footprint (greenhouse gas production) of the mental health system is not insignificant. This has been documented in data from the UK National Health Service [13], where the largest portion of the mental health system's carbon footprint is found to be attributable to pharmaceuticals. Mitigation strategies there include efforts at reducing medication wastage and more use of social and nature-based treatments.

Adaptation means becoming better suited to one's environment; it is *adapting to the unavoidable, and reducing vulnerability.* NASA defines adaptation as "Adapting to the climate change already in the pipeline." Greenhouse gases have long residence times in the atmosphere and keep producing increased heat long after they have been emitted. According to the Intergovernmental Panel on Climate Change, methane stays in the atmosphere for 12 years. Carbon dioxide stays in the atmosphere for varying lengths of time dependent on conditions, but generally for many decades. Therefore, we are now experiencing the results of greenhouse gas emissions from decades ago and we can expect increased global heating effects even if we rapidly become carbon neutral in our activities. Adding to the seriousness of our situation are feedback loops in the climate system, such as loss of the albedo effect with ice melt and the release of methane from melting permafrost, that create

accelerations in heating beyond what would be expected from the presence of the greenhouse gases themselves. The term adaptation encompasses all activities that help us to prepare for and be less vulnerable to these effects.

Out of concern for adaptation has grown a particular focus on the notion of *resilience*.

Resilience is defined in many ways. I like this definition by the Rockefeller Foundation. *Resilience is "the capacity of individuals, communities and systems to survive, adapt, and grow in the face of stress and shocks, and even transform when conditions require it"* (https://www.rockefellerfoundation.org).

Resilience is a useful concept, but some controversy surrounds it.

Those expressing wariness of the concept of resilience cite the multiple implicit meanings that the word resilience can have. Resilience can mean *resisting change, accommodating change, or directing change* [9]. Critics express concern that in practice apparently resilient behaviors could actually be maladaptive as people double down on rebuilding in the same old individualistic, high consumption ways. People can unconsciously consider survival to mean survival of lifestyles with which they are identified. Another pitfall is that encouraging resilience of affected groups can distract from, and be used as a substitute for, addressing the systemic issues that perpetuate their vulnerability. It is more convenient to engage in "resilience training" of affected populations than to advocate legislatively for measures that will reduce poverty, improve education, enhance security, and in those ways strengthen communities. Nevertheless, it is crucial that the activities of resilience training and social justice work be seen as both/and responses rather than as mutually exclusive.

First Person Narrative

People who are between disasters have responsibilities as I have learned from disasters I have experienced in my own life. Talk of one's own difficult experience is often a projective identification, where one is simply projecting one's own trauma-related feelings in talking about something terrible, with a lack of useful digestion of that experience. What I hope to provide here is useful digestion, useful reflection on the implications of multiple disasters. I do this because the reality of multiple disasters is an important part of what we confront with climate change. I have been through some disasters, which I describe here as background to explain principles with which I have emerged. I have been through a hurricane – Hurricane Hugo in Charleston S.C. During that hurricane, I was a psychiatry resident on call in the County hospital near the water. The building shook all night; the first floor flooded, we lost power and water and telephones. It really did feel as though the building might crumble. I have also had my house burn down, killing my cats who I was unable to rescue. I had flooding in the basement of my office in a "freak storm" a year and a half after the house burned down. A year after that I had flooding in the basement of my next home, in another "freak storm".

Here is what I have come to believe:

- *We are either within or between disasters;*
- *therefore those between disasters have a responsibility:*

Even under fortunate circumstances of financial security and extensive social support, a disaster is enormously disruptive. A lot of time and attention goes into maintaining and rebuilding. There is the dirty work of attending to possessions, and there is the displacement which highlights one's dependence on all the particular places and routines undergirding a life. There is grief, the processing of which typically gets delayed in the immediate disaster aftermath. There is also cognitive dissonance as one deals with systems that march on unaffected by disaster and with others who are not in the disaster. With the flooding of my basement, I one day went straight from wringing muddy water out of my clothes to sitting in my office listening to someone who was excitedly describing small details of their perfect new house. Not only is disaster disruptive, but it also sets one apart socially. When an entire community goes through a disaster, as I experienced with Hurricane Hugo, there is a comradery in the initial phase of heroically pulling together, but it is followed by more difficult phases.

It became clear to me that, because of the attention-intensive disruption caused by disaster, people in the midst of or in the immediate aftermath of disasters are not able to be working on necessary mitigation and adaptation to climate change. That means it is incumbent upon the rest of us to be doing this work. I refer to "the rest of us" as those who are between disasters. Disasters are becoming more frequent and severe. Clearly, no part of the country or the world is immune from the increasing disasters related to sea level rise, wildfires, increasingly intense storms, heat waves, and toxic algal blooms. Nobody is now immune. Therefore, in doing the work to address climate change we must function like a flock of geese, where the head goose, tired by the brunt of the wind will drop back and somebody else will take the lead, allowing others to ride in their draft. I credit my daughter with this lovely metaphor. This is what will need to happen across neighborhoods and across the world as areas in the midst of and aftermath of disasters will be unable to do as much for themselves and will certainly be unable to initiate necessary large programs for the addressing of climate change. Therefore, those less affected must do the work. Since no one is immune, the practical logic of this should be apparent.

Respect for Autonomy, in the Context of Disasters, Can Be Inappropriate

Because people in the midst of disasters must attend to so much, they are not in the best position to know what they need. I cannot tell you how many people sincerely said, "Let me know if there is anything I can do," after my house burned down. I was in no position to figure out what others might do. My family and I were best helped by those who took it upon themselves to do things or give us stuff. Analogously, it makes no sense, and is neglectful, to wait for those most affected by climate change to educate us about climate change or to tell us what they need.

Waking up and Mobilizing Requires Varieties of Containment

Around the time of my second flood experience, I was at an Integral Theory conference, where climate change was being discussed. This gathering dealt with complex metamodels of reality and was also spiritually oriented, so the environment of the

conference was open, intellectually curious, and supportive. My suitemate there was distressed by the climate change information. In contrast to the equanimity of most attendees, she spoke to me with agitation, looking me in the eye and saying, "The bottom line, Janet, is that we might be able to adapt to 2 degrees. But right now we are on track for over 4 degrees, and that will create an Earth we would not recognize." Even though I had heard these things before, in that instant the information penetrated me and it was immediately clear to me that this was the most important thing happening and I must work on it. In short order, I reflected on what I could contribute and set about finding like-minded colleagues. I credit the *containing* environment of that conference with my waking up and mobilizing. Climate change evokes many fears which are then unconsciously defended against, interfering with awareness and engagement [21]. However, we have many means of bearing difficult information. The term containment was notably used in the psychotherapeutic literature by Bion [5] to refer very specifically to the process whereby an infant's emotional distress is taken in by the mother and modified into a bearable form within the mother and through the mother's communications back to the infant. Since Bion, the term containment has also been used more broadly. I use it here to refer to all things which allow us to bear difficult information and feelings. In that moment at the conference, I was contained by intellectual frameworks, relationships, and spirituality. From that point on I have also been contained by my own agentic work in concert with other people. The particular meanings granted to the natural world and to human struggle from the cultures and religious traditions that influence me are easy to take for granted, but I am coming to also recognize their profoundly containing effects.

Waking up to and engaging with climate change and our larger environmental dilemma requires varieties of containment [12]. Therefore part of the project now before us requires the cultivation, and the provision, of these kinds of containment – relational, cognitive, spiritual, and agentic, as well as kinds of containment available in systems of meaning-making and support inherited or adopted from cultural and religious traditions. These containing activities are often subsumed under the notion of resilience, or of "transformational resilience." However, as I mentioned earlier, there are connotations of resilience that are problematic. Therefore, because of the importance of containment, I believe it is useful to appreciate and consider the need for containment separately.

Global mental health will be supported by work on the various forms of containment that can allow for clear thinking and action among those who are not in the immediate aftermath of disasters. Therefore, the promotion of these forms of containment can be recognized as important to global health.

Complex Systems and Wicked Problems

Cognitively, an important containing framework for understanding our situation is that of complex systems. There is a technical difference between a complicated system and a complex system.

A complicated system is like the workings of an analog watch. There are many gears, multiple moving parts in contact with other moving parts. However, if you

know the math and physics and the size and placement of the gears, you can determine precisely what the effect of any intervention will be in the system. This is a complicated system.

A complex system is different. Climate is a complex system. Those working in mental health and in global health also have experience with complex systems, because human beings are complex systems. With a complex system, you cannot predict precisely what the effect of any intervention will be. Here are some other characteristics of complex systems [7]:

- System memory/history
- A diversity of behaviors
- Elements interact dynamically
- Level of interaction is fairly rich
- Interactions are nonlinear
- There are loops in the interconnections
- Complex systems are open systems
- Complex systems operate under conditions far from equilibrium
- Individual elements are ignorant of the behavior of the whole system within which they are embedded
- Chaos (the butterfly effect) and self-organization (emergence, evolution)

I am describing the nature of complexity for three reasons.

- The first is that it is important to understand that with which we are dealing.
- The second is that there are some hopeful features of complex systems that can be usefully taken to heart, like "the butterfly effect" and "emergence" of higher levels of organization. Because of complexity, anyone's actions could have important repercussions (the butterfly effect). Because of complexity, we can look beyond even extensive and painful environmental degradation to the possibility of new workable patterns/systems coming into being, the characteristics of which cannot be entirely predicted ahead of time (emergence). The creation of these new structures would involve the participation of all parts of the planetary system, which includes us.
- The third reason is that complex systems produce implications, believe it or not, for the appropriateness of our involvement with climate.

Problems involving many aspects of complex systems get called "wicked problems." The term *wicked problem* was first coined in 1967 in discussions about social policy. Climate is a wicked problem. The geosciences involved are enormously complex. Additionally, with climate, beyond the complexity of the geosciences, there is now involvement of all the human factors – human systems, human cultures, the functioning of the psychology of individuals – all of these factors are influencing climate.

Many theorists in various disciplines have been grappling with the question of what is the best approach to a wicked problem such as climate, where there are so

many moving parts and we cannot know with certainty what the effect of an intervention will be. Two things have been concluded.

The first is that there must be interdisciplinary and what is now being called transdisciplinary work. The second is that there must be continual reassessment of our situation and of the effects of interventions [4, 8, 10].

So not only is it easily argued that our involvement with the climate change emergency is appropriate because of our obligations to work for public health. It also makes sense for us to be involved because the very nature of the wicked climate problem *calls for* interdisciplinary response and action.

Defries and Nagendra describe two "traps" in work with the wicked problem of climate – falsely assuming a tame solution and inaction from overwhelming complexity. There is not a tame solution to a complex problem. A complex wicked problem calls for work from multiple angles. Given the emergency that is this problem, it can be easily argued that it calls for all hands on deck.

There are three facets of mental health systems' relationship with climate change all of which now have developing literature. The first two, mitigation and adaptation, are described above. The third is what can be called "Reckoning with reality."

Reckoning with Reality Is an Ongoing Task, As Essential as Mitigation and Adaptation

In reckoning with reality, the complexity and emotionally charged nature of climate change material make it difficult to psychologically hold. As a result, almost prismatically, a constellation of dialectics arises as one considers climate change. Examples of these dialectics are hope–despair, certainty–uncertainty, scientific climate reality–social reality, individual agency–collective agency, nature as comfort–nature as a threat, collapse–evolving civilization. It can be tempting to constrict one's attention to only one pole of these dialectics, but, for the purposes of learning and creative response, it is important to hold dialectics open, exploring the poles and the tensions between them [12].

Many psychoanalysts are describing individuals being in degrees of disavowal in relation to climate change. Disavowal is a defense mechanism wherein one can know and not know something at the same time [21]. Because of degrees of ambivalence about climate change, people can appear as though they are from different tribes when they may be at different stages en route to acceptance or acknowledgment. Data from the Yale Climate surveys [11] support this supposition. They divide the population into the so-called "Six Americas," consisting of "the Alarmed," "the Concerned," "the Cautious," "the Disengaged,", "the Doubtful," and "the Dismissive." However, the Yale surveys document increases in the proportion of Concerned and Alarmed over time, with decreases in the proportion of Dismissive, Doubtful, and Cautious. They also document that even among less concerned Americans, significant minorities endorse feelings of fear and helplessness about global warming. So it can be argued that even those who appear less concerned are in some stage of a process of reckoning with reality (Fig. 22.2).

Reckoning with reality involves respecting our actual relationship with the natural world. We cannot just objectively assess and then decide what to do, though

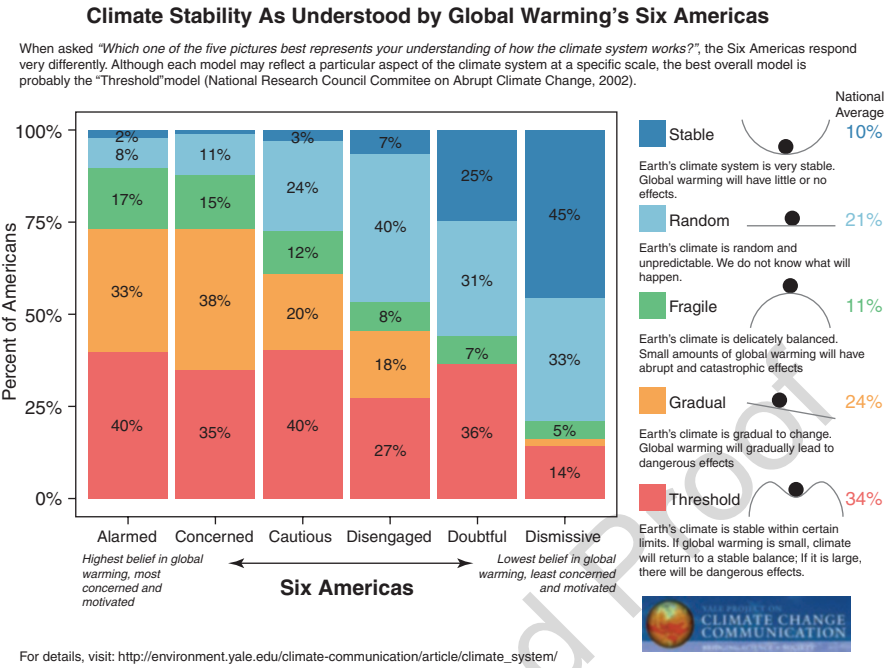

Fig. 22.2 Climate Stability as understood by global warming's six Americas. (https://climate-communication.yale.edu/publications/climate-stability-as-understood-by-global-warmings-six-americas/) AU3

objective assessment is important. An approach of only objective assessment would be instrumental; it would be objectifying. It would not be appreciating the real relationship we are involved in. Our relationship with the natural world is like any relationship – always unfolding, ultimately uncertain, influenceable by us, influencing of us, and eliciting our own feelings and reactions which in turn influence our attitudes and our responses. Some categorize this kind of reflection as part of adaptation or resilience. But given our tendency to ignore our real relationship with and our embeddedness in the natural world, the ongoing need for reckoning with reality is too easily overlooked. Therefore I recommend we consider it a separate category. We, our individual lives, all of our cultural inheritances, our systems, and institutions, have all been created within a relatively stable climate system which is now dramatically changing. We are necessarily inside that which we are now seeking to understand and influence. We are completely dependent upon that which we are seeking to understand and influence. These factors challenge us practically, intellectually, and emotionally, making the necessary reckoning, and the fruits which can emerge from it, very easy to ignore or gloss over. Ongoing reassessment of our situation, our values, and our goals will necessarily be a process of continuous revelation, just as in any healthy long-term relationship. Reckoning with reality on an individual level means time for deep reflection and processing of thoughts and feelings with others.

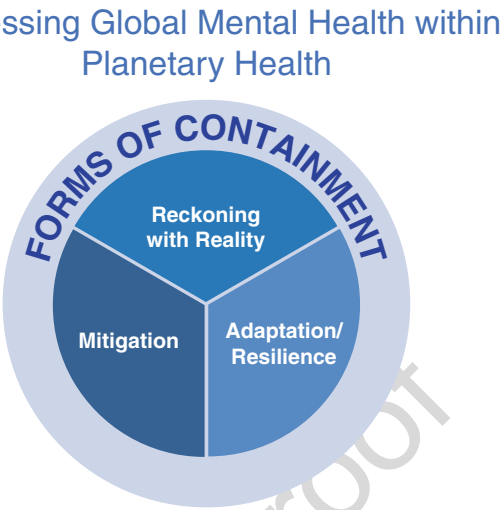

Fig. 22.3 Addressing Global Mental Health within Planetary Health

Reckoning with reality at the global scale means understanding and lending one's advocacy to policies such as those in the Paris agreement, and understanding the evolving recommendations of the Intergovernmental Panel on Climate Change (IPCC). It also means deciding how in one's own personal and professional life, one can best contribute and finding allies in doing so. There are no sidelines on which to sit. We are by definition all included in the problems and solutions of planetary health (Fig. 22.3).

Recommendations

The Importance of Focusing on less Affected Areas for Education

It is the populations who are not in the aftermath of disasters that can bear more of the headwinds.

Those who are wringing muddy water out of their clothes, grieving lost loved ones, figuring out new routines in alien households, or migrating to more hospitable locations are not in positions to be devoting attention to the influencing of necessary policies and cultural attitudes that can support mitigation and adaptation to climate change.

Populations less affected should be targeted for the processing of planetary health information and for the cultivation of forms of containment that can assist with the processing of this information and the taking of action to mitigate and adapt.

Both/and Thinking

Climate change easily elicits seeming polarities that should be held in dynamic tension. Ongoing aggressive work is needed on multiple fronts within the three domains of mitigation, adaptation, and reckoning with reality. Because of the multifaceted

nature of the problem and solutions, everyone has things to contribute and different people will play different roles. We should use care not to exclude some avenues as we pursue others. Wicked problems require work from multiple angles.

Remembering Containment

Given the challenging nature of reckoning with this reality and its dynamic uncertainty, means of containment should be kept in mind and promoted – cognitive containment, relational containment, spiritual containment, containment provided by cultural and religious traditions, and perhaps most importantly agentic containment. All those working in the field of mental health should be prepared to transmit the containing understanding that though we traverse tumultuous times, within complex systems new stable patterns can emerge. However, no one is on the sidelines of that emergence, and urgent change is now required, for the living systems of the planet and for ourselves. Before you go back to what you were doing, take a moment to think deeply about what you can do.

References

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1. Anderson, C. A. (2001). Heat and violence. *Current Directions in Psychological Science, 10*, 33–38.
2. Baider, L., Peretz, T., Hadani, P. E., et al. (2000). Transmission of response to trauma? Second-generation Holocaust survivors' reaction to cancer. *The American Journal of Psychiatry, 157*(6), 904–910.
3. Bain, P. G., Milfont, T. L., Kashima, Y., Bilewicz, M., Doron, G., Gardarsdottir, R. B., et al. (2016). Co-benefits of addressing climate change can motivate action around the world. *Nature Climate Change, 6*(2), 154–157.
4. Berry, H. L., et al. (2018). The case for systems thinking about climate change and mental health. *Nature Climate Change, 8*(4), 282–290.
5. Bion, W. (1962). *Learning from experience*. London: Karnac Books.
6. Burke, M., González, F., Baylis, P., Heft-Neal, S., Baysan, C., Basu, S., & Hsiang, S. (2018). Higher temperatures increase suicide rates in the United States and Mexico. *Nature Climate Change, 8*(8), 723–729.
7. Cilliers, P. (Ed.). (2007). *Thinking complexity: Complexity & Philosophy, volume 1*. Marblehead: ISCE Publishing.
8. Defries, R., & Nagendra, H. (2017). Ecosystem management as a wicked problem. *Science, 21*, 265–270.
9. Fisichelli, N. A., Schuurman, G. W., & Hoffman, C. H. (2016). Is 'resilience' maladaptive? Towards an accurate lexicon for climate change adaptation. *Environmental Management, 57*(4), 753–758. https://doi.org/10.1007/s00267-015-0650-6.
10. Galway, L. P., Parkes, M. W., Corbett, K. K., Allen, D. M., & Takaro, T. K. (2016). Climate change frames in public health and water resource management: Towards Intersectoral climate change adaptation. In F. W. Leal, H. Musa, G. Cavan, P. O'Hare, & J. Seixas (Eds.), *Climate change adaptation, resilience and hazards. Climate change management*. Cham: Springer.
11. Leiserowitz, A., Maibach, E., Rosenthal, S., Kotcher, J., Ballew, M., Goldberg, M., & Gustafson, A. (2018). *Climate change in the American mind: December 2018*. New Haven: Yale University and George Mason University. Yale Program on Climate Change Communication.
12. Lewis, J., Haase, E., & Trope, A. (2020). Climate dialectics: Holding open the space between abyss and advance. *Psychodynamic Psychiatry, 48*(3), 271–294.
13. Maughan, D. (2015). *Sustainability in psychiatry. Occasional paper 97*. London: Royal College of Psychiatrists.

14. National Aeronautics and Space Administration. https://climate.nasa.gov/solutions/adaptation-mitigation/. Accessed 9/15/19.
15. Patz, J. A., Gibbs, H. K., Foley, J. A., Rogers, J. V., & Smith, K. R. (2007). Climate change and global health: Quantifying a growing ethical crisis. *EcoHealth, 4*(4), 400.
16. Ray, S. J. (n.d). My favorite lecture: Coming of age at the end of the world. Accessed at https://www.khsu.org/post/my-favorite-lecture-coming-age-end-world, 9/15/19.
17. Rockefeller Foundation. https://www.rockefellerfoundation.org/blog/investing-right-now-tomorrow/. Accessed 9/15/19.
18. Salas, R. N., Malina, D., & Solomon, C. G. (2019). Prioritizing health in a changing climate. *The New England Journal of Medicine, 381*, 773–774.
19. Volkan, V. D. (2001). Transgenerational transmissions and chosen traumas: An aspect of large-group identity. *Group Analysis, 34*(1), 79–97.
20. Watts, N., Amann, M., Arnell, N., et al. (2018). The 2018 report of the Lancet countdown on health and climate change: Shaping the health of nations for centuries to come. *Lancet, 392*, 2479–2514.
21. Weintrobe, S. (Ed.). (2013). *Engaging with climate change: Psychoanalytic and interdisciplinary perspectives*. London/New York: Routledge.
22. Winnicott, D. W. (1960). The theory of the parent-infant relationship. *The International Journal of Psycho-Analysis, 41*, 585–595.
23. Weart, S. (2008). *The discovery of global warming: Revised and expanded edition*. Cambridge, MA: Harvard University Press.
24. Yale Project on Climate Change Communication. https://climatecommunication.yale.edu/publications/climate-stability-as-understood-by-global-warmings-six-americas/. Accessed 7/15/2020.
25. Yehuda, R., & Bierer, L. M. (2009). The relevance of epigenetics to PTSD: Implications for the DSM-V. *Journal of Traumatic Stress, 22*(5), 427–434.
26. Yehuda, R., & Bierer, L. M. (2008). Transgenerational transmission of cortisol and PTSD risk. *Progress in Brain Research, 167*, 121–135.
27. Younger, M., Morrow-Almeida, H. R., Vindigni, S. M., & Dannenberg, A. L. (2008). The built environment, climate change, and health: Opportunities for co-benefits. *American Journal of Preventive Medicine, 35*(5), 517–526.

Author Queries

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Queries	Details Required	Author's Response
AU1	Please confirm the inserted citation for Figs. 22.1 to 22.3.	
AU2	Please confirm if identified head levels are okay.	
AU3	We have redrawn Figs. 22.2 nd 22.3. This is for your information.	
AU4	References "14, 17, 24" were not cited anywhere in the text. Please provide in text citation or delete the reference from the reference list.	