This civilisation is finished: So what is to be done?

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Acknowledgments from the Author

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[Editor's note: This is an edited and referenced transcription of a talk given at Churchill Coll., Cambridge, on Oct. 27 2018. See the original video, and the Q-and-A that followed, https://www.youtube.com/watch?v=uzCxFPzdO0Y&feature=share]

Abstract

We've gambled too much on succeeding in preventing or mitigating anthropogenic dangerous climate change and the anthropogenic extinction crisis. Because we were unwilling to face up to the alternative.
But the alternative is not as simple as an instantaneous end of life would be. The alternative is complex, involving many possible variants of 'unthinkably' horrendous, bad, and even good.

Most crucially: there is a huge difference between the various versions of complete irrecoverable societal collapse, on the one hand, and the rise of a successor civilisation(s) out of the wreckage of this one, on the other.

We have to be willing to think this. And face it. We have to get serious about the processes of transformational and deep adaptation that are now necessary. We cannot any longer avoid the vast effort involved in attempting to adapt our communities to cope with our changed and

changing world; not least because the time-lags built into the climate system mean that, even in the extraordinarily unlikely event that we manage to stop massively damaging our climate further, it is bound to deterioriate further for a long time to come.

And, more fundamentally, because this civilisation is finished. The only way in the hard times to come that it might appear to persist is if we manage to transform it beyond recognition… That transformed civilisation would in no meaningful sense be the same civilisation as ours.

This paper asks, given that this civilisation is finished, what exactly, among those willing to face up to this terrifying and liberating reality, is to be done?

Transcription:

I want to start out by addressing the younger people in the room. And what I have to say to you is stark. It is this:

- your leaders have failed you,
- your governments have failed you,
- your parents and their generation have failed you,
- your teachers have failed you,

and I have failed you.

What I mean is that we have all failed to raise the alarm adequately; and so of course we have failed to prevent the dangerous climate change that is now here,[1] and the worse climate change that is coming and that is definitely going to get a lot worse: definitely, because of time-lags built into the system. If we had been going to tackle this in such a way as to actually get a grip on it, we would have done so a generation ago at minimum.

Roughly speaking we would have elected Green or genuinely green-friendly, non-growth-obsessed governments everywhere in the world a generation ago and they would have done things that were quite unpalatable to a lot of us. That would have been true leadership.

But of course absolutely nothing like this has happened. So now we're in a real last chance saloon. The globally hegemonic civilisation of which we are all a part is in an end-game. Those who wanted to preserve it have already failed.

And because of that failure I'm afraid for you. I have fear for you: I fear that some of you are unlikely to grow old.

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[1] I focus in this paper almost exclusively on climate, rather than on biodiversity. This is only because climate is the surest route toward our self-destruction. The worldwide attack on biodioversity, the forced march of most wildlife toward extinction, is also however a very serious contribution to the possibility of our own extinction (as well as a set of infinite crimes, on its own terms, as I sketch at points below). See Watts, J. 2018. So in fact, even from an anthropocentric point of view, my perspective in the current article is if anything too narrow, and too optimistic…

And there is nothing worse for human beings than their not being able to take adequate care of the next generation. (Read, R, 2017a)

I'm really sorry to have to be the one to say this to you; though I suspect that many of you already know it, deep down.

Why do I say this? Why such a ‘negative message’?

Well then let's talk about the Paris agreement, because that's what is supposed to be giving us all hope around dangerous climate change. If Paris is achieved, we are supposed to be able to breathe again.

And it was a remarkable achievement, diplomatically, politically. It was and is hard to expect anything better than Paris. Every country in the world had to agree; and, incredibly, they did; and they came up with reasonably bold proposals — compared to what had ben done previously — for reining in climate dangerous emissions.

So, let's talk about why that extraordinary achievement — as I say, it’s very hard to see how one could have hoped for more than Paris — was and is absolutely nowhere near enough.

So; the first substantive thing to say about Paris is that of course Paris is now a few years old and things since then have on balance got quite a bit worse. Since then the world's weather systems appear to be spinning out of control. Just in the last three years since the time of Paris, our climate appears to be turning truly chaotic. And furthermore there’s been various news — mostly bad — for example, scientific evidence recently about the extent to which excess heat has been stored in the oceans (Galey, P, 2018) A lot more than was previously recognized; and that's a kind of ticking time bomb lurking within the wider global overheating problem which is not going to go away; that heat is there for the long haul, gradually poised to raise surface and air temperatures too.

And meanwhile the initial signs of compliance with Paris are not good. Since 2015, as we all know, the most powerful man in the world, from what is in practice really still the most polluting nation in the world, the United States (they say that China is the most polluting nation, but that’s not yet really quite true; it only looks like China is if you ascribe all the emissions to China for all the products that China exports to us and to the Americans and so on), has pulled out of the Paris agreement — which is of course a pretty devastating hammer blow against Paris. And now the possibly-even-worse newly-elected President of Brazil, Bolsanaro, threatens to devastate the world’s greatest green lung, the Amazon. (Bolsanaro now says he will remain in Paris; but that just demonstrates the toothlessness of the Paris Agreement. Never forget: Paris is merely a voluntary agreement!)

But it's worse than that. Consider the two-degree ‘realistic’ target of Paris (Never mind 1.5, which is more like what we would really need, but which is

utterly eye-watering for the actual world we inhabit.). Most scientists agree that actually if all of the commitments that are supposed to be made, in order for the treaty to work, were made, then the actual dangerous climate change that result might well raise global temperatures by more than two degrees. In other words, the science on which the Paris agreement is based is itself overly conservative, overly optimistic, unsafe, unprecautious; and that's not too surprising when you consider that the IPCC is actually not a properly scientific process. It's a scientific process that has built into it also a political process. Like Paris itself, it typically achieves only a kind of lowest common denominator. (Spratt, D & Dunlop, I 2017) In other words: the Paris targets themselves probably wouldn't keep us safe from climate cataclysm, *even if they were achieved.*

But it's worse than that; because they won't be achieved. The actual commitments that countries have made towards those Paris targets are well short of what would be required in order to meet those targets. Countries voluntarily commit under Paris to say what are they going to do to meet their Paris obligations and if you add all those commitments up, they come to considerably less than what Paris requires in order to work even on its own terms (let alone in terms of what would actually be needed to limit us to 2 degrees of over-heat; let alone 1.5!).

But it's worse than that; because actually the commitments that countries have made, the commitments that governments have made to reach those (inadequate) Paris targets, are actually in stark contradiction to what virtually every single one of those governments — with, possibly, the exception of Bhutan — are actually planning to do over the next ten years or so so. Virtually every country in the world has plans to encourage further 'economic growth', such as plans to encourage the building of — or simply to build a lot more — infrastructure: agro-industrial infrastructure (including for more intensively-reared, climate-damaging meat), transport infrastructure (including for expanded air travel, which cannot be effectively greened), industrial infrastructure (including for high-carbon products such as cement), energy infrastructure (including for climate-damaging fracking), etc. These infrastructures will have long 'half-lives'; they commit us to ongoing high-carbon pathways at the very time when those pathways need to be radically transformed.

Most of those plans then — not all, but by far most — stand in stark opposition to the possibility of achieving the Paris commitments. And tell me, which side is likely to win out right? Classic dilemma: if you have the business ministry against the environment ministry, or the Chancellor against the climate change Minister, which one wins the fight? I'll leave it to you to guess…

But it's worse even than that. Because the worst thing, arguably, about the IPCC process is that it seriously underestimates the possibility of feedbacks which could spiral the climate system completely out of control, and which may already be kicking in, potentially explaining the emerging disastrous

weather chaos of the last few years. Among those feedbacks are the albedo loss feedback: so that's the loss of ice for instance in the Arctic, and the less ice you have the less heat and light gets reflected back out into space and the more that gets absorbed, and there are scientists who suspect that the albedo-loss situation is a lot worse than the IPCC have taken into account.[2]And most scary of all is the situation vis-a-vis methane which we know now is starting to be released in significant quantities again mostly from the Arctic, from the permafrost there, etc... They call it the methane dragon. (Shimek, R, 2016)

They call it that for a reason. Dragons are an icon of something terrifying, overwhelming, out of control. If that methane release starts to accelerate, which might already be happening and may well happen in a big way over the next 5, 10, 15 years, that locks us into catastrophic climate change. Probably runaway climate change, because you then start getting a further vicious circle of more ice being melted, and so more methane being released, etc...

We don't know that this is going to happen. But we do know that it appears to be starting to happen. And we do know that it is an existential threat. It would be utterly reckless to allow it to fire up. Precaution demands of us a radical change of direction.

And the crucial thing to remember about methane is that methane is a greenhouse gas approximately 25 times as powerful as carbon dioxide (more like 85 times as powerful (Vaidyanathan, G. 2015) in the short to medium term).

The final thing to know about the Paris agreement is that the Paris agreement, for its targets later this century to be achieved, depends on 'climate-engineering' technologies, (Read, R. & Paul, H. 2019) aka geoengineering technologies. The idea being you can purportedly engineer the climate of the entire earth.

There are only two problems with this dependence of the Paris agreement on those technologies.

They are firstly that the technologies do not exist — and I mean that pretty much literally; most of them are simply fantasies that scientists, technologists and engineers have. The ones that do exist have not been tried at scale and we don't know that they'll work at scale if they were tried at scale.

And the second problem is that even if they do exist or did exist it would in most cases be profoundly reckless, radically unprecautious to bring them in at scale.(Read, R. & Paul, H. 2019) It would be an experiment with the entire globe with enormous deleterious possible and actual side-effects. The technology which they talk about the most is BECCS, which is basically growing lots of biomass that you then burn. You allegedly sequester the

[2] See https://climatediscovery.org/ipcc-underestimates-greenland-ice-loss/

carbon; you allegedly keep the carbon safe for hundreds (preferably thousands) of years under the surface of the earth. If that process works, which there's serious reason to doubt (that you can do all of those things safely and economically at scale), and if you did it at scale, it would be devastating to the Earth's ecosystems. You would be basically creating huge amounts of monoculture and replacing the biodiverse ecosystems which need restoring rather than replacing. Geoengineering is built into virtually all the Paris scenarios; we've got no reason to believe it works and even if it does work it probably still shouldn't be used.

The conclusion it seems to me that one is bound to draw from this — and look, I would love to be wrong so please correct me if I can be corrected in the question-and-answer session, but I've given this talk a number of times and I haven't heard any significant corrections yet — the conclusion I think one has to draw from this is that, to put it in a slightly crude sort of contemporary way: Paris is toast. We know, if we're prepared to actually look at the facts that the aims of the Paris agreement will not be achieved, and that they'll almost certainly be missed by a long way. That means that unprecedentedly dangerous climate change is coming and it is going to get a lot worse for a long time to come.

And that's the central context in which I say that we failed you, and that we failed.

It seems me there's only one possibility for getting around this awful conclusion. There's only one possibility for how what I've just said could conceivably prove to be wrong. Which is if people came to realize the kind of points that I've just been making and that a number of others (Bendell, J. 2018) are starting to make and came to realize just how desperate the situation is, then they (we) might decide to do something completely unprecedented to change it. (Read, R. 2017a) But it would have to be completely unprecedented. You get a sense of the scale of what I'm talking about, if you take those words quite literally.

So: We're talking about turning around the entire supertanker of the world's economy, the entire supertanker of the world's hegemonic civilization. An almost overwhelming prospect.

It seems that there are in total three possibilities before us in this context:

Possibility number one is that we do what I just mentioned: We manage to **transform civilization**. A transformed civilization would absolutely radically alter the entire basis of pretty much everything that we do. The kind of transformation we're talking about is a lot bigger than for example just a large-scale conversion to renewable energy. We're also talking about radically reducing the amount of transportation of goods and people around the world. Radically relocalising. (Scott-Cato, M. 2013) Changing our farming practices profoundly and the entire nature of our agriculture, radically reducing the amount obviously of meat that we eat. And much

more. It would be a total transformation the likes of which we have arguably never known, certainly not since history began.

I hope that that happens and - probably like many of you - I'm actively working to make it happen; but what I want to put to you this evening among other things is the thought that it would be a bold person who was prepared to commit to the thought that that is *going* to happen. That we're going to make it happen, and that we're going to make it happen quickly enough. It would be a very risky bet to bet everything upon that kind of completely unprecedented transformation, and on overcoming all the vast vested interests and ignorances and stupidities and lazinesses and so on and so forth which stand in the way of it. For such a bet would occlude attention and resources starting to be devoted to take seriously the question, “What if we fail?” How then could we make things less bad for whoever follows us.

So that is why I think we simply have to consider further possibilities.[3] **Possibility number two** is **a successor civilization** after some kind of collapse, and that, it seems to me now, is what we have to start to think is likely to happen. Or put it this way: actually, some versions of this possibility are now very likely to be the *best* scenario we can realistically hope for or plan towards (because possibility number one is going to be so very hard to carry off). If the sketch that I gave you about Paris is broadly right then, unless we are incredibly lucky or incredibly determined and brilliant (or almost certainly both) then we are facing, almost certainly, changes around the world which are going to bring an end to this civilization with extreme prejudice. So we need to think about what comes after it. We need to think about it now, and we need to start to work toward it; because there are many sub-possibilities within possibility two, and some of them are very ugly. The successor-civilisation could for instance be largely a matter of warlordism. We have to try to do what we can to prepare our descendants for survival and for a new civilisation which will be worth the paper it is written on.

Possibility number three of course is simply **total collapse**. And in a way there's not much that needs to be said about that. It's obviously highly, utterly highly undesirable! I'll just say a tiny bit about it. There are various different forms that it could take. It could mean simply there is no more civilization, but that there are a few people hanging on here and there.

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[3] Have I not omitted a further possibility?: Namely, the deeply-unpleasant scenario of “Resource Earth” (Crist, E. 2012) , the Earth bent wholly towards humanity’s will, without wildness, and without space or buffering.
I omit this possibility because I do not consider it to be one. For such a turbo-charged continuation-version of our civilisation is a radically-unprecautious scenario, a virtual complete impossibility organisationally and practically given the utter chaos that climate chaos is going to introduce into the system, and most fatally of all, an entropic absurdity. It imagines a future in which our current civilisation takes over and manages the entire planet; but this will not be possible, for thermo-dynamic reasons, even with a ‘circular economy’: https://www.resilience.org/stories/2018-11-12/how-circular-is-the-circular-economy/ . “Resource Earth” might be pursued for a while, but is on a hiding to nothing. (Thanks to Tom Greaves for discussion that has prompted this note.]

James Lovelock (Lovelock, J. (2007) talks about a few thousand breeding pairs in the Antarctic. Or it could be worse than that it; it could mean complete human extinction and extinction of most or all other mammalian life on Earth. Or it could be worse even than *that*; it could be the elimination of virtually all complex life except extremophiles. Why could it be as bad as that? Because if something like the methane dragon really does start to fly and causes a runaway effect there is no knowing how how much it will go on. There isn't very good reliable science on this but some scientists think that it could push up global temperatures by at least something like 12 degrees. The heating might not stop at all. James Hansen talks about the possibility of the same kind of thing happening on earth that has happened on Venus.[4] You may be aware that Venus's atmosphere is made up quite largely of carbon dioxide from an extreme greenhouse effect. That's why Venus is a lot hotter than Mercury even though Venus is a lot further from the Sun than Mercury. The extreme possibility, and it *is* possible, is that the oceans would start to boil off on earth and that would be the end of all complex life, possibly even of all life.
Now I'm not going to talk much more about that; I think it's obvious that total collapse has to be avoided and it doesn't hugely matter when you drill down within it which version of it you have. But it still does matter a bit; for instance, it would (for more than one reason) be much much worse for us to exterminate all cetaceans as well as ourselves than it would be for us just to exterminate ourselves; above all, because doing the former would render it less likely that a new species would be able to come along after we were gone and do a better job of creating a culture that can last.

But I don’t want to dwell here on possibility three and its variants. I'm more interested in talking about some kind of successor civilization after collapse. Primarily simply because I think that that is where we are most likely to be headed.

It seems to me that what we've actually done mostly up to this point is assume that we can transform our civilization; or actually, more properly, what we've mostly done is assume that we can just kind-of tinker with it and reform it and that that will be enough. We’ve put all our eggs in the basket of mitigation. The *most* we've tended to assume is that we need a civilizational transformation. But it's no longer enough, to ‘just’ aim at that; we have to take seriously the possibility that, given how bad things are, how much we've let them go on, that this civilisational transformation is now going to be very hard to attain even if we aim at it.

Any which way you look at these three possibilities they justify the title of this talk. This civilization is finished because the best outcome that could happen, if we are lucky and very courageous, is that we transform this civilization out of all recognition. If we do that, then afterward it will not look the same at all; it will be in no meaningful sense the same civilisation. For what is needed will be a transformation more radical than the change that took place in the Industrial Revolution. It will be as radical, arguably, as the

[4] https://youtu.be/ACHLayfA6_4

Agricultural Revolution (and of course far, far faster). I would suggest it would necessarily be a truly great, a virtually total transformation.

This civilization as we know it is finished. It has a sell-by date on it, we just don't know how far past that sell by date we're going to be able to keep the balls in the air. It will either collapse utterly, collapse and give birth to a new civilisation (which could be wonderful or horrible or anywhere in between) from its wreckage, or it will be transformed out of all recognition. There is no chance of it simply continuing in modified form - the brutal logic of how Paris will fail and the climate will destroy us, that I began by setting out, unless we change the rules of the game, ensures that.

So the question now is what comes after civilisation as we know it. Is it going to be a transformed civilization? Is it going to be some kind of successor civilization? Or is it going to be nothing at all? And critically: how can we influence that choice? If I'm right, *what is to be done?*

I've got a series of ideas on that that I want to share with you.

First off, **Wake up**. We need, individually and collectively, to wake up. We need to wake up to this reality. The think tank that I chair is called Green House and our previous project was called ‘The post growth project’. We were talking there about why as a society we have to give up the fetish for ‘growth’. Our new project is called ‘Facing up to climate reality’[5] and it similarly does, I hope, do what it says on the tin. What we think is that people need to face up to these very harsh realities that I'm sketching for you here, and not pretend any longer that we can get away with just focusing on, say, changing our energy infrastructure to renewable energy, or even get away with assuming that we can and will succeed in transforming our civilization in the way that I very much hope we still might.

This waking-up process is not necessarily particularly pleasant or easy. It may involve you, for example, if you're willing to go through it, experiencing some despair. It certainly should involve you experiencing some fear and some — well, actually, a lot — of sadness. If you're not heart-sad about what's happening, and if you're not afraid in the context of the kind of things I'm saying and reminding us of, then you're not paying attention.

And in fact we can go further than that. There's a wonderful new branch of psychology called ‘eco-psychology’ (Roszak, T. 2002) and what the ecopsychologists argue is that the despair, the fear, the sadness, the rage that we feel in this kind of context is rational and could even be described as a kind of consciousness arising from the earth itself. In short: We *are* nature coming to an awareness of what we are doing to ourselves. In the sense that we are *feeling* what we are doing to our beautiful planetary home; and those kind of feelings are *appropriate*. If you're not feeling some of those feelings, if you're not feeling some of them right now, well then one suspects there might be something seriously wrong with you...!

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[5] See https://www.greenhousethinktank.org/facing-up-to-climate-reality.html

What the ecopsychologists say is: don't (as conventional psychology *does*) focus on the individuals. Don't say: this individual is feeling sad, ergo they need to be fixed; rather, look at that individual and say this individual is feeling sad, and maybe that kinds of sadness *tells* us all something reliable about what is happening, about what is wrong *beyond* them. That sadness or fear is an expression of what's actually happening at this point in history and what's happening to the Earth. So if you're experiencing bad feelings at this moment in the human adventure, you're not alone and *you may well be adjudged as a result to be more rational than the people who are not experiencing those bad feelings.*

(Also, let me just briefly mention in passing that if you're experiencing these feelings in a really bad way well then you should actively seek support from someone who can actually give it, for example an eco- psychologist, or come and talk to me and I can potentially put you in touch with the growing number of therapists and psychiatrists who are actually seriously interested in helping people who are suffering from what we're doing to the earth, and from the likely consequences in our lifetimes, and beyond, of that.)

I'm going to single out one person who's also very worth reading in this connection: my teacher, the deep ecologist Joanna Macy. For example her book, 'The work that reconnects'[6] is sort of a guide for the person who is involved in this kind of difficult journey that she used to call 'despair work' (or 'despair and empowerment work'), which I think is quite a useful phrase for it. There is a *need* even for despair. It has a great energy.[7] And it isn't somewhere one necessarily gets stuck.

So firstly, let's wake up. And, of course: Let's gently (but none too slowly) wake everyone else up too.

Secondly: **We need to talk** about this; and that's why it's really important that in about another 10 minutes or so I'm going to stop and we're going to have a question-and-answer session. Because it's really unhealthy to keep all this in the confines of your own mind.

Let me tell you a quick story about how Green House's 'Facing up to climate reality' project started. We decided we needed to have a conversation among ourselves in the core team at Green House on what was happening in relation to climate. Was what was being done enough, etc? If not, then how long did we have before the proverbial would hit the proverbial? And we started off with a 'go-round'.

What we each had to say in the go-round was, What do you think is going to happen and what are your feelings about it? I was the first person to go and I said something like 'Well what I think is gonna happen is that very

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[6] See also https://www.workthatreconnects.org

[7] If you allow your despair, and work through it, rather than suppressing. or holding it at bay as so many of us have been doing for so long, then remarkable new possibilities open up.

probably there is going to be a collapse, and I’m terrified for myself let alone for people who are younger than me, and I feel very lonely in this terror. I feel very alone in it, because I think that no one else is really seriously thinking this.’ And the next person went — and they said pretty much the same; and then the next person and *they* said much the same...

What was interesting about that process was that by the time we'd gone around us all, two things had emerged.

Firstly, the feeling that some of us had had, certainly that I had had, that maybe I could have sort of hold on to some hope that maybe I was wrong because maybe it was only *me* who was thinking this: well, that was gone. And tears welled up in my eyes, as I realised I now had to accept that my fears weren’t just some psychological complex that I had; they were probably realistic. They were certainly shared. It turned out that everyone else had been secretly thinking about the (high) likelihood of collapse as well.

But then the second thing that happened was more encouraging and more liberating: which was that we realised that we could talk about it. We’d started to break the taboo. ‘It's not just me’, we all realised; we can talk about it in a group, and *perhaps* if we're having this conversation starting to realize that we've all really got this fear, then others are — or could soon be — too. Perhaps too this liberating experience can be shared with lots of other people out there — which is why I decided to start giving these kind of talks…

Third, we need to think seriously, as we haven’t done yet, about my option number two out of three, the **successor civilization** idea. We need to think civilizational succession. (Read, R. 2018a) We need to think about what that actually means, and then to start to act accordingly.

It's very very challenging. We need to think for example about how if there's going to be some kind of partial collapse then at least we preserve the values of civilization through that very very difficult period. It seems to me that writers (except perhaps for a tiny handful of Sci-Fi writers), academics of all kind, certainly philosophers like myself, have as yet done very little if any of this work. But I think that this kind of building of a new kind of ‘imaginary’ which can cope with the kind of scenarios I'm talking about is vital. It's hard to think of *any* intellectual work that could be more important at this time.

Fourthly, we need, as I sometimes describe it, to **build lifeboats** to carry as many as possible of us through the storms that are coming.
What kind of things do I mean by that?

Well I mean a whole load of things and I can only sketch a few examples of them here. So we could start out with mentioning/doing a little bit of individual ‘prepping’. Preparing for potential collapse.

So I would recommend to you for example to not keep all your money in the bank but to keep some under your mattress. Because it may well be that that the banking system, the financial system, as we know it, is not with us for very much longer; but money will probably be with us for quite a while before any fuller collapse-event. (By the way, just in case any criminals are reading this: the money in my house is not actually under my *mattress* so don't go looking there; you'd have to tear up the whole house to find it and you still might well not.) And: I would recommend you to just store some food as I'm doing. Dried food, canned food, etc... It's an elementary precaution.

What else?

We have to (re-)build community, the relations we have with each other which have been very fragmented by the kind of society that we live in: a pseudo-individualistic neoliberalised economistic society.

Those relations are going to be absolutely vital if there is some kind of partial collapse as I'm suggesting there is very, very likely to be. The 'transition towns' movement is a good model here and has already achieved a certain amount. That needs to be built on, expanded. We need to work on how to preserve things which will be useful to future people through a potential collapse. For example seed banks: Seed banks are a great example. Quite challenging though in the context of climatic change.

The great seed bank at Svalbard, as many of you may have heard, was seriously disturbed recently by the massive increase of temperatures in the Arctic. It was previously thought to be pretty much invulnerable. It's a seed bank basically deep in the 'perma'-ice; but it started melting. We have to think about how to preserve seeds through climatic change; and we also have to think about the kind of seeds which are going to be useful. Basically, being geographically distributed from where they originated in relation to a temperature rise — and therefore changes in ranges of plants.

So we should be, for example, in this country planting native species of course; *but* we should also be planting some non-native species which will cope with higher temperatures (and potentially drier/drought conditions), temperatures which are overwhelmingly likely to be coming our way.
In Green House we call this kind of work 'transformational adaptation'.[8]

We need to take the attempt at (such) adaptation seriously,[9] and that means that we need to rethink it: to deepen and transform our concept of it. We need to shift far more resources of all kinds to it (while we still can). We need in short to rethink it radically.

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[8] ' Transformational adaptation' means: adaptation that is not merely defensive, but that contributes directly to transforming our society in necessary and beneficial ways, and that simultaneously prevents/mitigates further climate damage. (Heatley, B. & Read, R. 2017)

[9] While recognising that it cannot possibly fully succeed; 'adaptation' to ongoing dangerous climate change is only partially possible.

We need to try to adapt to the dangerous climate change that is coming and that adaptation needs to be *transformational*. It needs to be changing our society radically, and it needs to be a mitigator at the same time as it's adaptive.

There's another phrase which has started to be used in this connection, which I think is also very useful. People are talking about 'deep adaptation', (Bendell, J. 2018) the phrase helpfully coined by Jem Bendell; and *deep* adaptation means adaptation which is actually specifically premised on the thought that collapse is highly likely.

Deep adaptation considers the thought: What if (as, to a clear-eyed view, must now appear overwhelmingly likely[10]) we fail? What if, as is very likely, we really do fail, and things start to collapse? We need to be, for example, preparing for sea-level rise and not doing completely absurd things such as building nuclear power stations by the sea side; which is where virtually all nuclear power stations are built: which is an absolute definition of insanity at this moment in history. To build these things which are super-toxic for hundreds of years, in such places that are quite obviously vulnerable to sea-level rise. Highly toxic for hundreds of years in places where they are vulnerable to something which we know is extremely likely to be coming.

And in any case, if civilization does even partially collapse, how confident are you that all the kind of resources that are needed to keep those nuclear power plants (or nuclear waste) safe are going to remain intact; for example, to keep the spent fuel rods from catching fire and burning if their cooling pools dry out?

We've already seen at Fukushima a little bit of what can happen even in the middle of an intact civilization when something hits a nuclear power station hard. Remember that there are going to definitely be more and more 'natural' disasters, climate disasters. We cannot really, strictly, with a straight face, use that word 'natural disasters' anymore because they're partly man-made. Anyhow: There are definitely going to be more 'natural' (sic) disasters; *because* there are definitely going to be worsening climate disasters coming in the next generation.

There's a slight chance that we might transform to stop climate catastrophe but in the meantime there will definitely be more climate disasters as we're seeing right now. Building nuclear power stations in the context of that is absolutely absurd.

The deep adaptation agenda also is another reason for thinking that there's something very wrong about the ambition of geoengineering. Because the would-be geoengineer, to have this incredibly hubristic idea along the lines

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[10] From a strict philosophical point of view, this talk of the 'likelihood' of our failure is suspect. We cannot strictly speaking compute the likelihood of something that depends upon our own agency. That is why I more often turn to speaking of what bets one would make. It would be incredibly rash now to bet everything, as basically we have been doing, upon our winning the climate 'war'.

of ‘humanity is going to control the climate of the whole earth’ work — the very kind of madly controlling thinking, note well, that got us into this mess — would have to have a technological infrastructure which you are confident you can support for the long run. Alright; so imagine for example, we put a load of ‘mirrors in space’, which is what some of the geoengineering fantasists want to do to deflect away sunlight so that we can beat some off the effects of global overheating.

We have to be able to be confident that those mirrors will be able to stay up there for a very very long time; and in fact actually most of the proposals for ‘mirrors in space’ are not literally mirrors. They are rather lots of very very small particles that you put up there and then they start to fall down again, and then you put more up there. Well, what would happen if you had a project like that and then suddenly you weren't able to put them up there anymore because the country that's supposed to do that has collapsed; then you’d get a sudden spiking in temperature which is far worse than a gradual increase in temperature.

Or think of some of the other potential side effects from other geoengineering schemes. People want to seed the oceans with iron and other stuff to create plankton blooms that will then sink to the bottom and can be sequestered, and that kind of thing. We don't know what the ecosystemic effects of that are going to be even if we are on top of our game. Maybe we can monitor those effects and then do *further* interventions to counter the horrible negative side effects quite likely to result from an intervention like that, *but* we can't do any of that if the civilization in question has collapsed. And you might then get some kind of vast oceanic dead zone opening up and nothing human beings can do about it.

One of the morals here is that there are worse things that could happen even than civilizational collapse. I think humans are quite bad at thinking collapse, but even worse about thinking unselfishly beyond it. What could be worse than our civilization collapsing? Well here's something that could be worse: if our civilization collapses in a really horrific uncontrolled way and poisons the remaining ecosystems at the same time. So be very careful what you wish for. The deep adaptation agenda says we need to be thinking and acting now in ways that take seriously into account the possibility that we will not be able to do the kinds of interventions in future that we can do now.

Fifth, **holding-actions**. This is a term from Joanna Macy. What does she mean by this?: Actions to hold the damage at bay and slow it down. What kind of things come under this heading?... Well again, a wide variety of things, everything from consumer boycotts and divestment campaigns — obviously Cambridge University must divest from fossil fuels — to political action, lobbying, getting involved in electoral politics. Don't make the mistake of thinking that because I'm saying that civilizational collapse in some form or another is likely to happen that we should give up on these conventional methods. Not at all. They're absolutely vital right now. It's just

that they're not enough by themselves anymore. We should think of them primarily as holding-actions, as holding back the potential catastrophe rather than actually either being able to stop it completely or being able to genuinely ameliorate its consequences.

I would throw in here that I would urge you all to not just vote Green but to join the Green Party. You know, it's great if you're in Labour or whatever and you're trying to do the right thing in that contexts, *but* there is only one party which is even remotely serious about the kind of agenda that we're talking about… The agenda which will determine our futures (even though the popular press most of the time is preoccupied with Brexit and 'Strictly Come Dancing' and what-have-you), i.e. the climate crisis… and that is the Green Party.

So holding-actions are a vital part of what we need to do.

Sixth point: as I've said, holding-actions are not enough. We should, we must, do something more: **Rebel**.

That's why I've got heavily involved with the Extinction Rebellion. These guys who I've joined with are very, very impressive. They're saying, look, this really is an emergency. It is incredibly urgent; it is going to determine our futures; the government's completely failed us; so we should not any longer accept their authority. It's not enough to do consumer boycotts and vote and so on. We should do non-violent direct action as well; and I think they're exactly right.

If you're impressed by anything that I'm saying here I would urge you to join in with the Extinction Rebellion, the rebellion against the extinctions already unleashed and the possibly — probably — far worse sequence of them to come, including potentially even our own. I think this is an idea whose time has very much come, and am reminded a little bit of the marvellous film series that some of you will be familiar with, the 'Hunger Games' trilogy. The second of those of those books/films was called 'Catching Fire' and the idea there was that that some small gestures of disobedience and defiance can create a spark that catches light and can ignite a much, much larger rebellion. Now I'm not talking about us doing the kind of things that the rebels did in 'The Hunger Games' films!

Thankfully our socio-political scenario is clearly not quite as horrific — yet — as the scenario those fictional characters were living under. But the potential future that we're facing *is* pretty much as horrific as theirs, and so it seems to me that the least — and, right now, the best — we can do is rebel through non-violent direct action as the 'extinction rebels' marvellously are doing.

One little side note on that. People sometimes say to me, 'Oh Rupert, you talk too much in terms that are kind-of fearful and you make people sad and scared and you don't give them enough hope'; and my reply is, well I don't think that this is really a time where hope is the most appropriate emotion

to feel. What we need right now is *courage*. What we need right now is courage to level with what is. Courage to face the reality that's trying to stare us in the face; and to try to do the right thing in the face of it: and that courage is what the Extinction Rebellion movement is showing. They're showing a real and manifest courage, a willingness to put their bodies on the line etc, and if enough of us manage to find the courage to do that too then we could yet change the course of history and we could, even now, bring about conceivably this transformed civilization which I mentioned earlier, which of course must be a much more 'hopeful' idea than the succession of civilization after collapse.

Do I think it's likely to succeed, the Extinction Rebellion? No. (Its task is far harder than precedents sometimes cited, such as the suffrage or civil rights movements. (Read, R. 2018d)) Do I think it *might* succeed? Yes; and that's the wonderful thing about human action. In regard to the future, one can never know what's going to work and what isn't. I certainly wouldn't *bet* on it succeeding; but I certainly intend to throw myself deep into trying to help make it succeed, and the more of us who are brave enough to do that the more chance that it might just succeed; and even if it doesn't succeed it will at least have shown some courage and some willingness to look what's coming in the face. (Which means that we'll be able, even if we fail, to face ourselves in the mirror, and not have to die of shame before our betrayed children.)

That brings me to the *seventh and final* thing on my list. **Stop**. We need to pause… To stop. What I mean by that is—: while I'm encouraging you to do all these things — join the Green Party, rebel, wake up, talk about this and so on — there's something else as well. We need to slow right down and actually give ourselves a chance to really take all of this in. And really think about it; and really feel it.

If we don't do that then we won't wake up properly and we won't be in a good position to wake everyone else up. We need to stop and give ourselves time to talk about this and work through our issues in relation to it. And only if we stop will we actually be in a good position to do the dramatic courageous things that we're going to need to do under these headings. If there is to be something worth calling hope emerging from all of this.

Paul Kingsnorth who saw a lot of the way things were going some years ago and was one of the founders accordingly of the 'Dark mountain' group has said the following. (Kingsnorth, P. 2018) He's said that there is an abyss opening up before us. We need to be brave enough to look into it; and only if we do that will we then know what to do next… and that's what I mean by stopping.

So I urge you to do some of these various 7 things; use your abilities, use your intelligence and your potential in the way that the best fits you to them. I would say don't restrict yourself to just one of them though; we

need to be giving ourselves multiple options, and we needed to be more rounded than our atomised society encourages.

We've gambled too much to date on being able to stop the juggernaut from destroying us. We need to think very seriously about what will happen if we fail and that's why the things I've spent most time here discussing are important, and more novel than they should be. But the final thing I have wanted to suggest to you is that what we need to do is to stop so as to give ourselves a chance to *reflect* on all of this; and only if we do *that* will we be actually well placed to make the next moves forward.

And now *I'm* going to stop and I'll throw it open to you for questions and discussion; which means that we're going to start to *talk* about this; which I think, as I explained in relation to the 2nd of my 7 'What is to be done?' points, is deeply necessary.

Thank you so much for coming here; thanks for your courage in being willing to face this; and thank you for your generous attention.

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