

Climate fixing, geoengineering and zeitgeist

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Course VIT212 Klima: Hva vet vi?
Hva bør vi gjøre?

Bergen, September 17, 2019



Universitat
Oberta
de Catalunya

CAETERIS ARE
NEVER PARIBUS

Tweets by @AndreaSaltelli



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Sign and donate. What these people are doing is unique. twitter.com/Jeroen_vdSluisj...



24/11



andrea saltelli

@AndreaSaltelli

Lovely (also in the sense of 'of love') piece by an Italian scholar [@robertocalasso](https://twitter.com/robertocalasso):

nybooks.com/articles/2016/...



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sensitivity analysis, sensitivity auditing, science for policy, impact assessment

My work & thoughts on climate

Integrated assessment
modelling?



Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha



Sensitivity analysis didn't help. A practitioner's critique of the Stern review

Andrea Saltelli*, Beatrice D'Hombres

Joint Research Centre, Institute for the Protection and Security of the Citizen, Ispra, Italy

A critique of both the Stern review of the impact of climate change and of its refutation

A critique of computing 'increased crime rate' due to climate change to the year 2100



Climate Models as Economic Guides Scientific Challenge or Quixotic Quest?

The uncertainties associated with mathematical models that assess the costs and benefits of climate change policy options are unknowable. Such models can be valuable guides to scientific inquiry, but they should not be used to guide climate policy decisions.

Terrible quantifications:
consequentialism in action



EARTH
OVERSHOOT
DAY

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EARTH OVERSHOOT DAY WAS JULY 29

On That Day, Humanity Exhausted The Biological Resources Our Planet Can Renew This Whole Year. Check Out Solutions Below So We Stop Increasing The Global Ecological Deficit.



At 8.00 am?

We use 1.75 planets
Or 17.5? 175? 1,750? ...Infinity?

How many plastic bottles are we
allowed to throw in the sea in a
year?

Try replacing plastic bottles with extinction of a species, or collapse of a
fishery, or a Fukushima,...



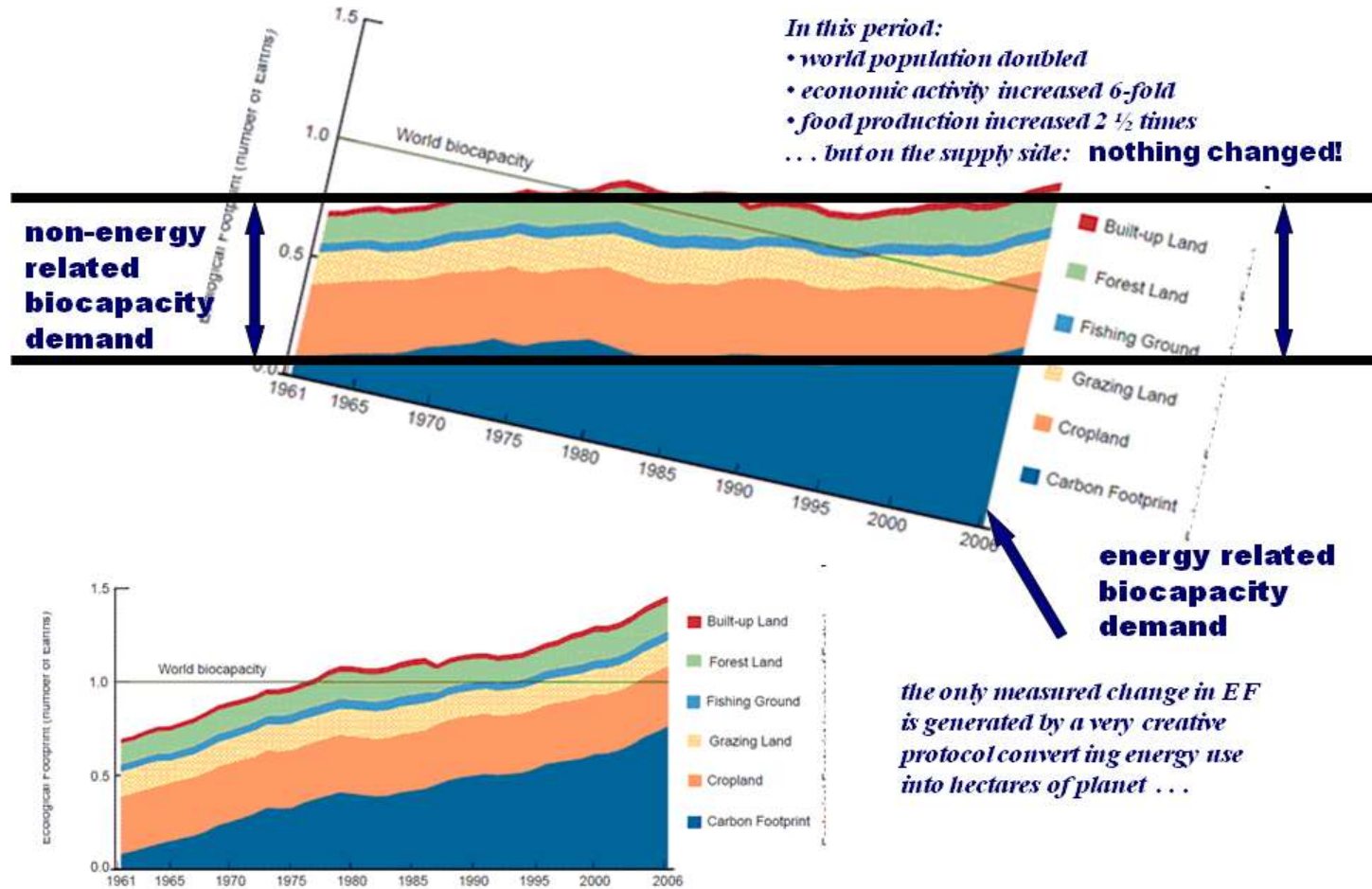
Move the date
forward 5 days
every years,
suggests Mathis
Wackernagel

The Ecological Footprint compress sustainability to a single metric (acres of equivalent land)



...but it is energy demand which makes the number

The change of world footprint in time (1961-2006)

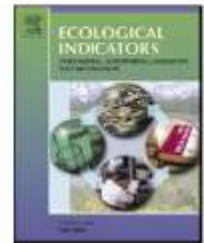




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Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind



Footprints to nowhere

Mario Giampietro^{a,c}, Andrea Saltelli^{b,*}



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Highlights

- The EF is inconsistent with its stated purpose of measuring demand on ecosystems.
- The EF depends mostly from a dimensionally flawed energy emissions assessment.
- The EF is optimistic at the global scale and policy-misleading at the local one.
- One cannot accept EF's flaws on the ground that the EF has normative virtues.
- EF's rhetoric trivializes bio-economics and muddles the sustainability debate.

Giampietro, M., and Saltelli, A., 2014, Footprints to nowhere, *Ecological Indicators*, 46, 610–621.

Goldfinger, S., Wackernagel, M., Galli, A., Lazarus, E., Lin, D., 2014, Footprint facts and fallacies: A response to Giampietro and Saltelli (2014) “Footprints to Nowhere”, 46, 622–632.

Giampietro, M., and Saltelli, A., 2014, Footworking in Circles, *Ecological Indicators*, 46 (2014) 260–263.

Alessandro Galli , Mario Giampietro , Steve Goldfinger, Elias Lazarus, David Lin, Andrea Saltelli , Matthis Wackernagel , Felix Müller, 2016, Questioning the ecological footprint , *Ecological Indicators*, 69, 224–232.

L. Blomqvist, B. W. Brook, E. C. Ellis, P. M. Kareiva, T. Nordhaus, and M. Shellenberger, “Does the Shoe Fit? Real versus Imagined Ecological Footprints,” *PLoS Biol.*, vol. 11, no. 11, p. e1001700, Nov. 2013.

W. E. Rees and M. Wackernagel, “The Shoe Fits, but the Footprint is Larger than Earth,” *PLoS Biol.*, vol. 11, no. 11, p. e1001701, Nov. 2013.

L. Blomqvist, B. W. Brook, E. C. Ellis, P. M. Kareiva, T. Nordhaus, and M. Shellenberger, “The Ecological Footprint Remains a Misleading Metric of Global Sustainability,” *PLoS Biol.*, vol. 11, no. 11, p. e1001702, Nov. 2013.

J. Van Den Bergh and F. Grazi, “On the Policy Relevance of Ecological Footprints,” *Environ. Sci. Technol.*, vol. 44, no. 13, pp. 4843–4844, Jul. 2010.

J. E. Stiglitz, A. Sen, and J.-P. Fitoussi, “Report by the Commission on the Measurement of Economic Performance and Social Progress,” *Sustain. Dev.*, vol. 12, p. 292, 2009.

Ecomodernist/techno-
optimist narratives: the
case of geoengineering

Techniques for carbon dioxide
removal (CDR);

BECCS (bioenergy with carbon
capture and storage);

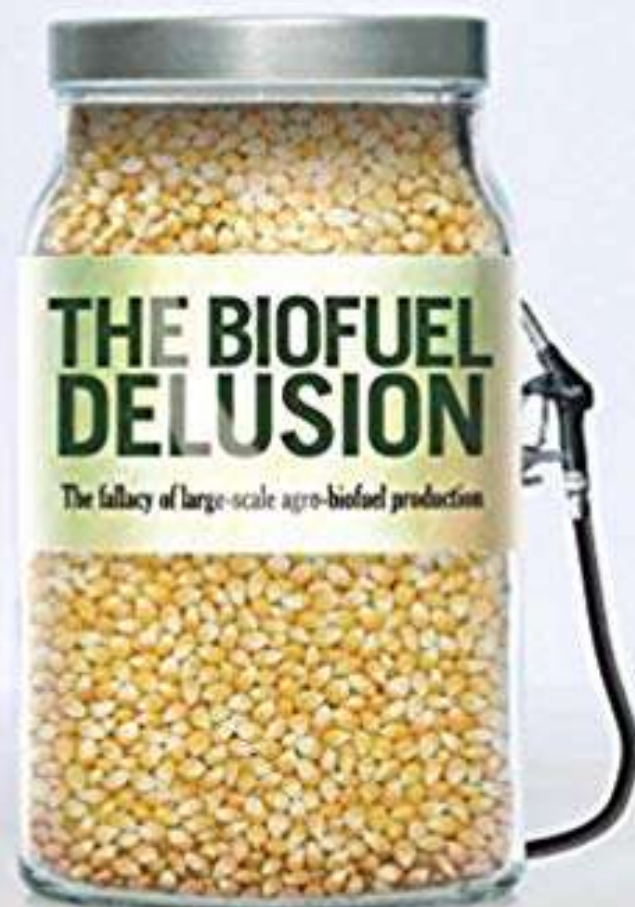
Same trajectory as biofuels?

10% biofuel in transport by 2020
(EU target) also to abate CO₂
emissions

- ➔ > food prices
- ➔ > deforestation
- ➔ < biodiversity
- ➔ > CO₂ emission because of
fertilizers (nitrous oxide)
- ➔ As much energy in as out!

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earthscan
from Routledge

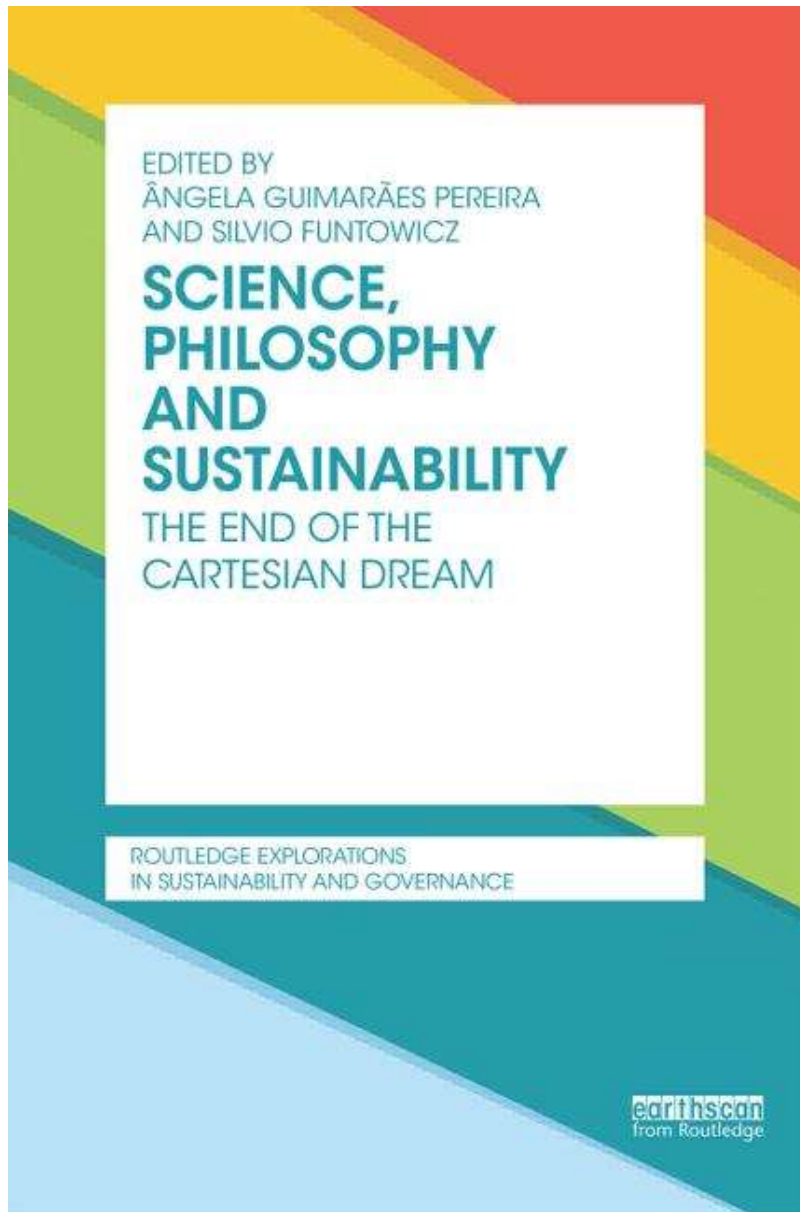


Mario Giampietro
Kozo Mayumi

Forewords by Vaclav Smil and Jerome Ravetz

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According to the same IPCC (2014)
BECCS (bioenergy with carbon capture and storage)
other CDR (carbon dioxide removal) techniques
are associated with challenges and
risks



7 Geoengineering dreams

Paula Curvelo

The Cartesian mechanistic view of nature still is still dominant in techno scientific framing of climate change



Western two powerful metaphors: “man as master and possessor of nature” and “nature as a machine”

From the dualism of Greek and Christian philosophies to our days

Contrasted with alternative metaphors, such as nature as a system of systems

Climate change
zeitgeist

From concern to
alarm, from alarm to
panic



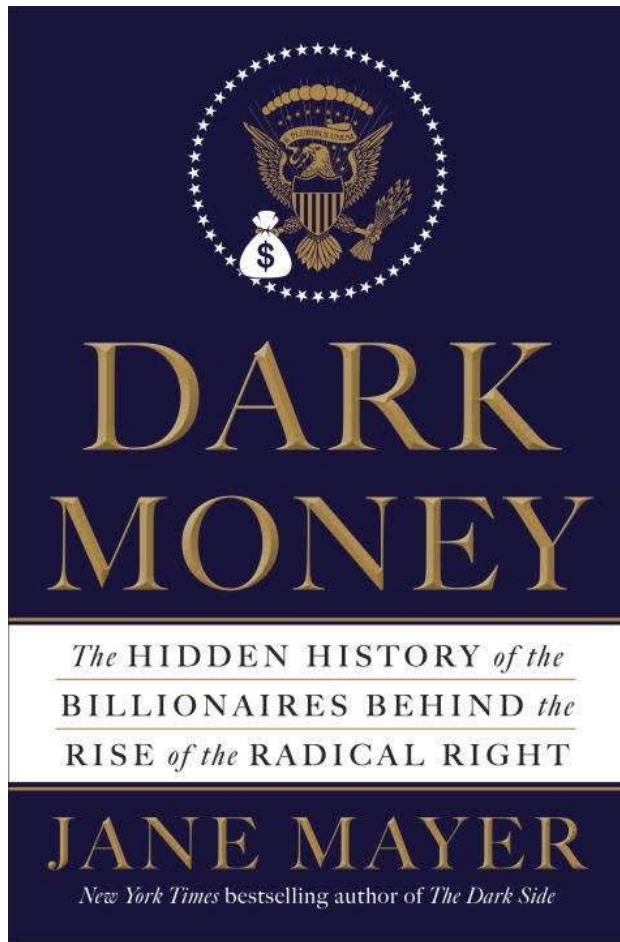
Greta Thunberg

'I want you to panic': 16-year-old issues climate warning at Davos - video

<https://www.theguardian.com/science/video/2019/jan/25/i-want-you-to-panic-16-year-old-greta-thunberg-issues-climate-warning-at-davos-video>

Main narratives: science as victim of big oil; if our lifestyles have not changed yet it is because of the so-called deniers (esp. in the US) & their dark money

The war on climate of the Koch brothers: chapter 8 of Dark Money



Some excerpts of chapter 8, The Fossils, here:
http://www.andreasaltelli.eu/file/repository/Chapter_8sr.pdf



Vandana Shiva, Naomi Klein, Noam Chomsky, and others call for citizens to organise for climate ‘emergency’



<https://rebellion.earth/>

Opinion

The Depravity of Climate-Change Denial

Risking civilization for profit, ideology and ego.



By Paul Krugman

Opinion Columnist

Nov. 26, 2018



1518

<https://www.nytimes.com/2018/11/26/opinion/climate-change-denial-republican.html>

Green New Deal – Joseph Stiglitz: “It is better to leave a legacy of financial debts, which our children can somehow manage, than to hand down a possibly unmanageable environmental disaster”



Joseph Stiglitz

Joseph E. Stiglitz, “From Yellow Vests to the Green New Deal,” Project Syndicate, Jan-2019.

The only institution suggesting that jobs may come before climate is the catholic church



Pope Francis

Pope Francis, “Laudato si” 2015,
http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html.

We can do it!

Economy can be made circular,
decarbonized, climate can be
geo-engineered

We compute and predict!

Mathematical models can predict damage in \$ up to the year 2050 or 2100

...to limit temperature increase to 2 °C with a 50% certainty a concentration of 450 ppm CO₂-equivalent should not be exceeded

Really?

Perhaps we could
change our
consumption pattern
ourselves –



– irrespective of
what deniers and
president Trump
choose to do

World Health Organization: seven million people die every year because of atmospheric pollution (outdoor and indoor)

➔ Seven million reasons to reduce the consumption of fossil fuels without awaiting the climate Armageddon

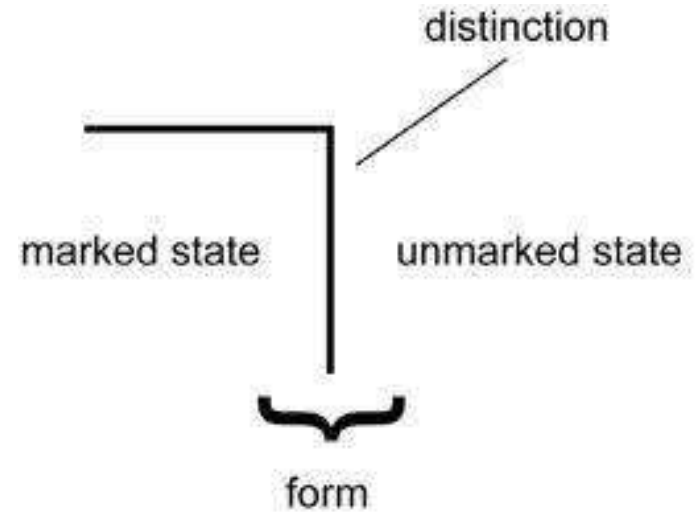
Surprises: Brexit, Tump, now the yellow jackets?



A tax which hits the poor more than the rich to fix the environment; the ultimate effrontery of the elites?

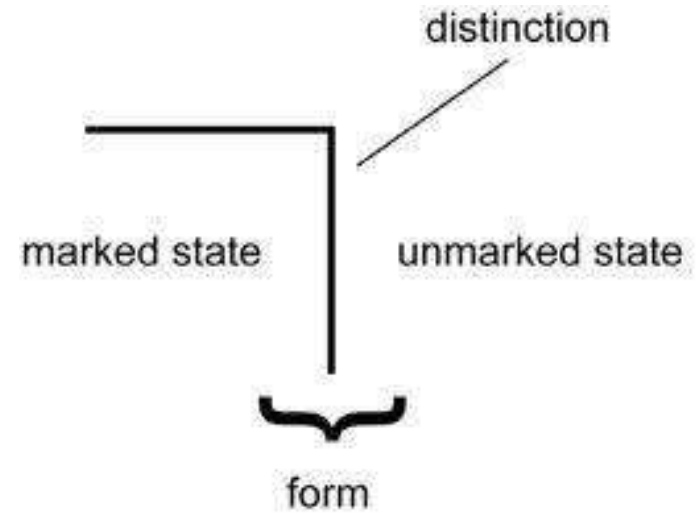
Norway's FNB (Folkeaksjonen nei til mer bompenger)

Instead of fostering ecological sensitivity, it boxes ecological problem into a single planetary container, where an **odourless and colourless gas** slowly increases the temperature of the planet



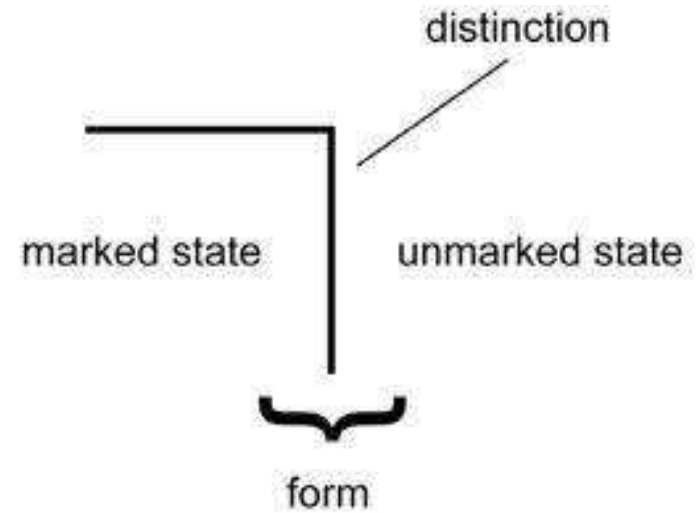
All observations
require a distinction
(N. Luhmann)

This vision risks
obscuring the messier
aspects of our impact
on the planet



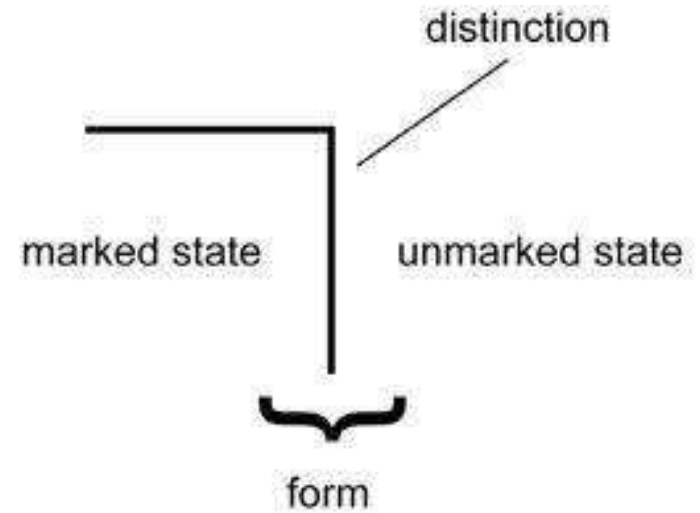
All observation requires a
distinction (N. Luhmann)

Since we need to fight
all forms of fossil fuel
we cannot fight the
dirtiest, from tar
sands to shale gas
fracking



All observation requires a
distinction (N. Luhmann)

Since we take up a fight with fossil fuels corporations we can fight less the agrochemical ones



All observation requires a distinction (N. Luhmann)

Insects Opinion

Insectageddon: farming is more catastrophic than climate breakdown

George Monbiot



The shocking collapse of insect populations hints at a global ecological meltdown

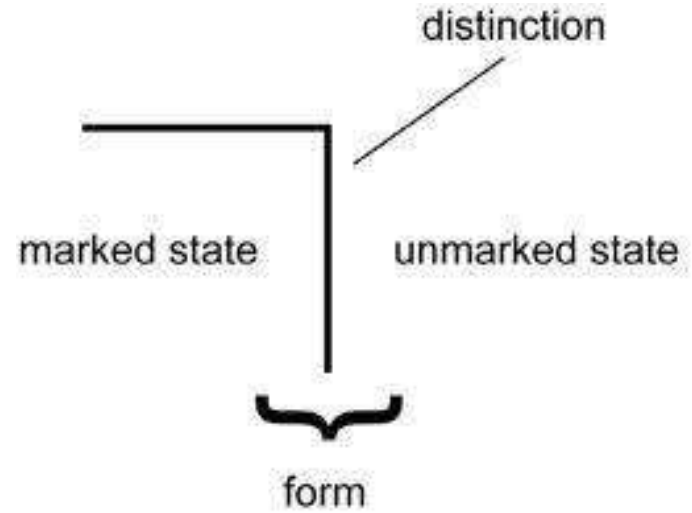
🐦 @GeorgeMonbiot

Fri 20 Oct 2017 12.11 BST



The climatic day of reckoning assuages our anxieties about the present by projecting the threat into a convenient not-so-close-to-affect-me future

A Baconian idol of the theatre?



All observation requires a distinction (N. Luhmann)

Increasing
temperatures,
sea levels,
hurricanes,
forest fires,
climatic
migrants...



**extinction
rebellion**



Financialization
of the economy,
Bolsonarization
of democracies,
incumbent
geopolitical
transformation...



distinction

marked state

unmarked state



form

The End



@andreasaltelli