



# INTERNATIONAL ASSOCIATION for PROMOTING GEOETHICS

Geoethics as a widening perspective, or:

*'How to entangle Small-scale Fisheries Guidelines, Geoethics and the Human Niche?'*

**Dr. Martin Bohle**

Member of the IAPG Board of Experts

*Professional Affiliation: Advisor at the European Commission,  
Directorate General for Research and Innovation (Brussels)*

*Disclaimer: All views expressed herein are entirely of the author,  
do not reflect the position of the European Institutions or bodies  
and do not, in any way, engage any of them.*

# Avant Propos

*“In the beginning there was the swamp,  
the hoe, and Jussi.”*

*“Täällä Pohjantähden alla”*

*Väinö Linna (1959)*

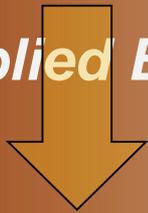
*People shape their environments - whether  
natural or engineered environments.*

*Camille Clerc (Just Passing)*

# *Introduction*

***"What do I like to argue here?"***

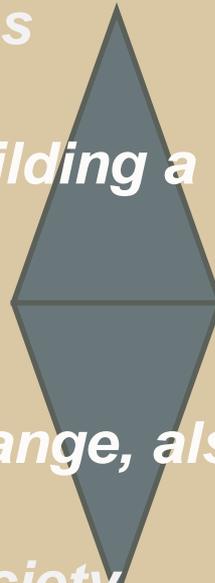
*Applied Earth Sciences*



**Geoethics**



***for: building a 'Human Niche'***



***a shared normative framework***

***under: change, also of the bio-geosphere***

*Functioning of the Society*



# *Lenses on "Small-scale Fisheries Guidelines"*



Duarte 2014: *'Global change and the future ocean: a grand challenge for marine sciences'*

Campbell et al. 2016: *'Global Ocean Governance: New and Emerging Issues'*

Jentoft 2014: *'Walking the talk: implementing the international guidelines for securing sustainable small-scale fisheries'*

Biermann 2014: *'Earth System Governance – world politics in the Anthropocene'*

# *"Small-scale Fisheries Guidelines" in focus:*



...state of the global ocean and coastal seas under the impact of anthropogenic global change, that is, within the 'Anthropocene'.

...pressing governance concerns, which need to be addressed at regional and global scales, and for which the FAO-SSF Guidelines provide an advanced application case.

...governance is the key challenge to implementing the FAO-SSF Guidelines; a challenge of a wicked nature that therefore requires more than a managerial approach to address it.

...implementation challenge of the FAO-SSF Guidelines is one particular realisation of a more common governance challenge, which requires a normative approach to achieve a sustainable governance of the 'wicked' global commons.

# The Anthropocene

The “Anthropocene”, a notion implying that:

*...the development paths of history and Earth-system(s) intersect, and*

*...the interactions between people are an intrinsic part of the Earth-system(s).*

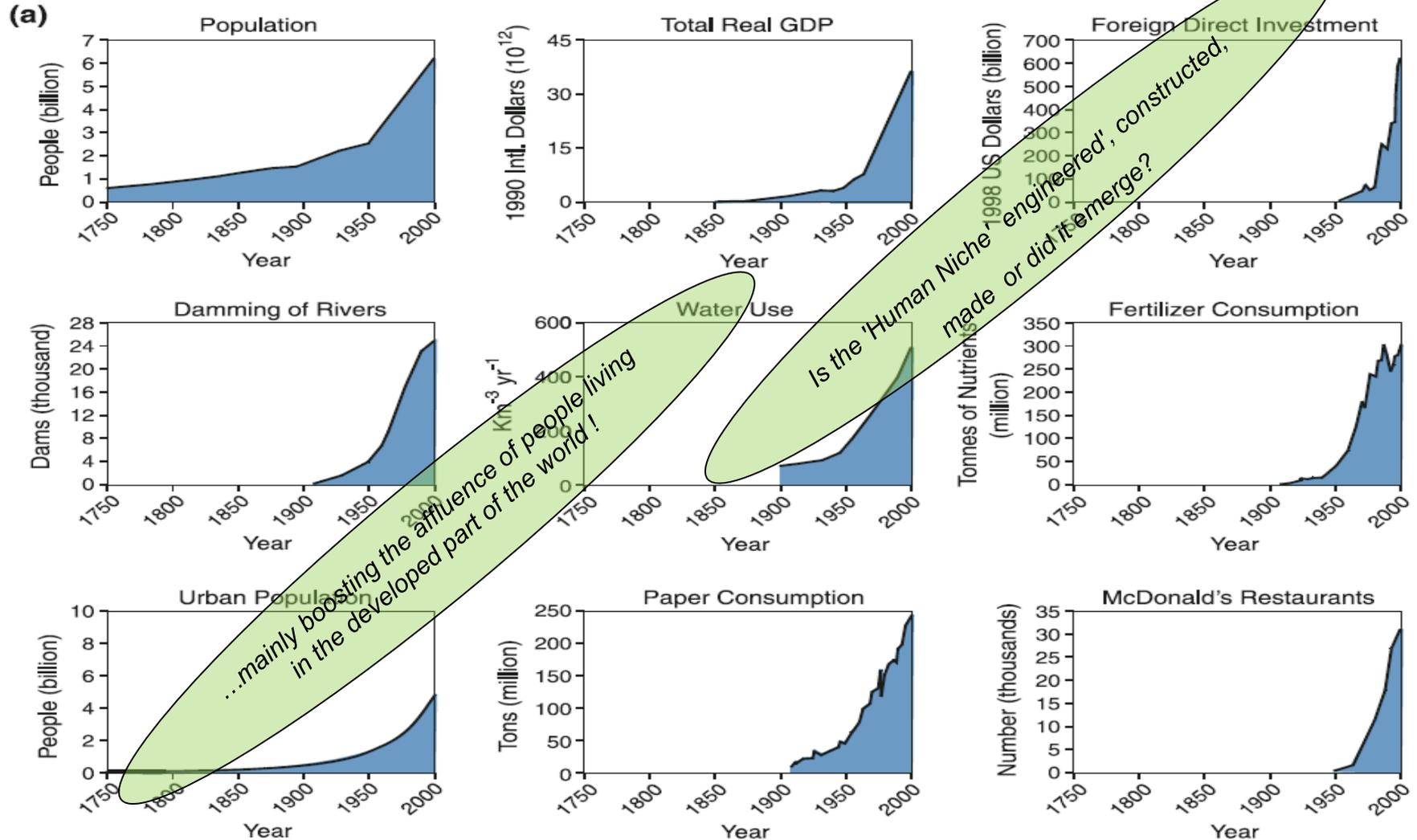
Biosphere, geosphere and human sphere intersect to form the commons of our life:

*...Human - Biosphere Intersection,*

*...Human - Geosphere Intersection,*

*...as well as the intersection of biosphere and geosphere.*

# 'The Anthropocene' or 'The Great Acceleration'



# *What is meant by 'Human Niche\*'? – a primer*

- ...the intersection of the biogeosphere and the sphere of human activities of social, economic, cultural and political nature;
- ...the production systems and consumption patterns that embeds geoscience know-how;
- ...a global biogeosphere that is disrupted little by citizens' activities and exposes them to tamed hazards, only;

**p.m. Google Scholar (5/4/17) 'human niche': >1200 publications (2011 - 2016)**

\* i) Ellis, Erle C. 2015. *Ecology in an Anthropogenic Biosphere*. Ecological Monographs 85 (3): 287–331. doi:10.1890/14-2274.1. ii) Fuentes, Agustin. 2016. *The Extended Evolutionary Synthesis, Ethnography, and the Human Niche: Toward an Integrated Anthropology*. Current Anthropology 57, S13 (June 2016): S13-S26 doi:10.1086/685684.

# *What is meant by 'Geoethics' ? – a primer*

- *...research and reflection on the values which underpin appropriate behaviours and practices, wherever human activities interact with the Earth system;*
- *...ethical, social and cultural implications of geoscience education, research and practice;*
- *...social role and responsibility of geoscientists in conducting their activities;*

**p.m. Google Scholar (5/4/17) 'geoethics': >500 publications (2011 - 2016)**

# Geoethics & Human Niche

- ❖ The interactions of human activities with the Earth system to build 'human niche'
  - ...often do not involve a *geoscientist, who is acting in a professional capacity,*
  - ...they are very tight-into citizens' daily lives, and
  - ...they reflect citizens' values and perceptions.
- ❖ The main application cases for geoethics go beyond geosciences into 'niche building', as said:
  - "...appropriate behaviours and practices, *wherever human activities interact with the Earth system...*".
  - **Examples:**

# *Human Niche Building & ...geosciences - examples 'I' -*

***...civil  
engineering is  
about building a  
visible  
intersection of  
the geosphere  
and economic  
activities...***

➤ dredging a waterway

➤ building a shore defence

➤ operating a power plant

# *Human Niche Building & ...geosciences*

*– examples 'II' -*

***...as technology evolves as more convoluted get the application of geosciences...***

➤ renewable energy from the wind, the tide and the sun

➤ tide, ice and sea wave forecasts for shipping & fishing

➤ Satellites for position & monitoring systems in a solar storm

# *Human Niche Building & ...geosciences*

## *– example 'III' -*

***...urban dwellings  
are intersecting  
the local and  
global bio-  
geosphere  
through massive  
fluxes of matter  
and energy...***

- receiving drinking water and ejecting waste water
- receiving electric power or fuels and ejecting heat and waste (*for example plastic*)
- receiving food (*for example fish*) and ejecting manufactured goods

## **Anthropogenic global change challenges:**

1) Societal Development

2) Nature Conservation

3) Known System Dynamics



***Human Geosphere  
Intersections are  
"engineered"***

The change processes of the geo-biosphere are happening simultaneously at a local, regional and planetary scale. They are composite of natural and social processes. The change concerns the marine environment too (see: SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development").

# *A study case: Small-Scale Fishery*

*The shift of the dynamics of the Earth systems happens mainly by the impact of the industrial global supply chains. Yet, the cumulated number of local artisanal activities has its global impact, in particular when triggered through environmental systems already strained by industrial exploitation.*

*The small-scale fishery provides one example, of several, of a 'cascading ecological crisis' [Galaz et al. 2010] in the Anthropocene: failure of a local socio-ecological system (decreasing fish stocks in Central West Africa because of industrial over fishing) drives a cascade of crisis (Ebola haemorrhagic fever outbreak).*

*Madlen Gebler (Glimps of Heaven)*

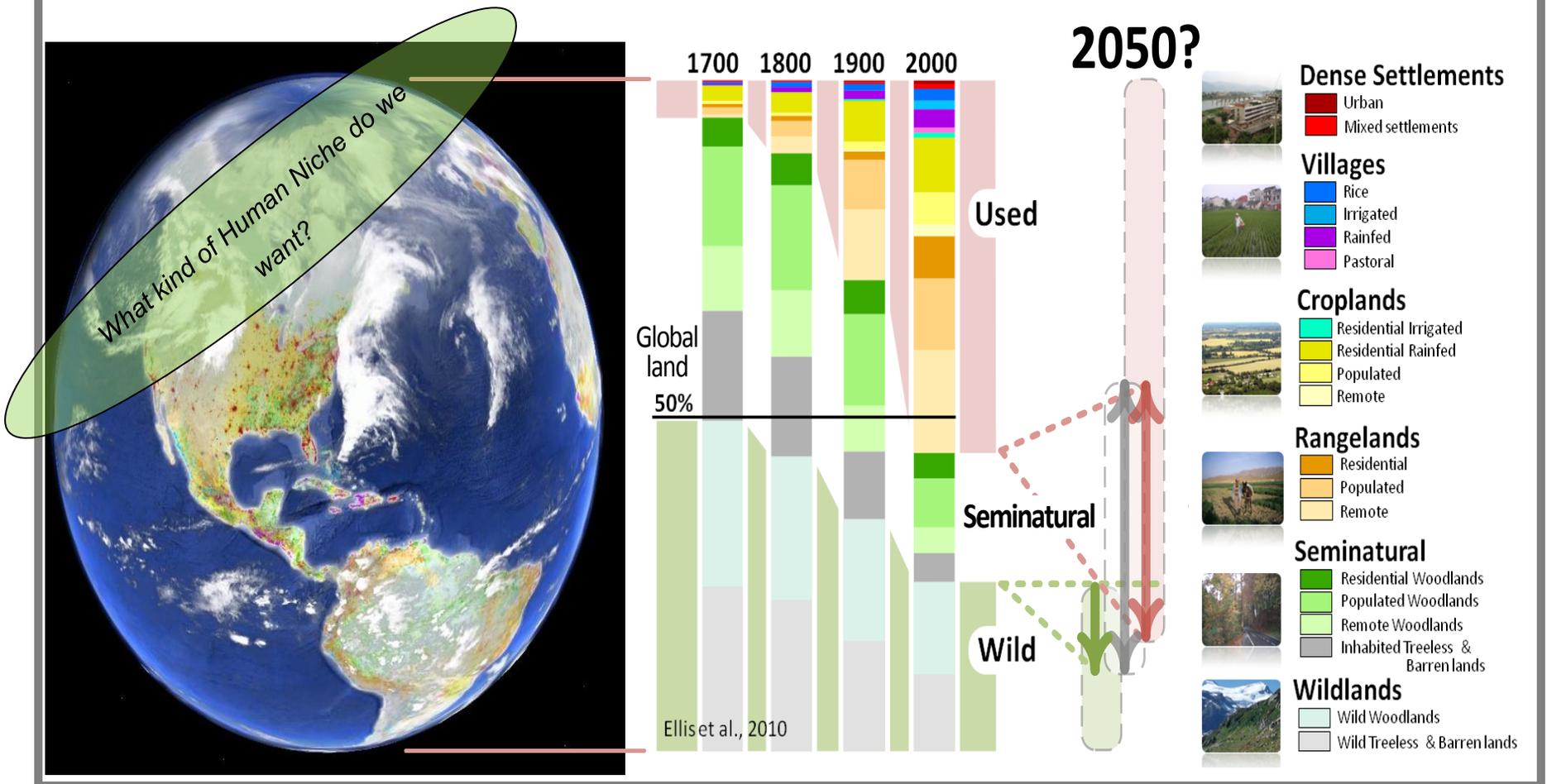
# *Common focus: Actor(s) & Norm(s)*



The cumulated change processes to geobiosphere are triggering a new stage of Earth system dynamics, the 'Anthropocene' that is different from the 'Holocene'

*Evidently, under such circumstance governability of niche-building for the human well-being is a very critical feature. Effective and efficient governability calls for normative meta-systems that associate actors across local, regional and planetary scales.*

# What kind of (terrestrial, marine) biogeosphere do “we” want ?



# What Geoethics is good for?

*"...geoethics is an orientation tool for geoscientists, able to provide them with the ethical dimension of their actions". Bobrowsky et al. 2017 [p.36]*

*...the application context for common geoethical thinking is*



...an orientation and a tool for (geo)-professionals.

...an orientation for expert advice, shared common sense, and an extended use-case for habitual value systems.

...an orientation for an extended use-case for applied ethics and a call for taking individual and collective responsibility.

*"Geoethics consists of research and reflection on the values which underpin appropriate behaviours and practices, wherever human activities interact with the Earth system. Geoethics deals with the ethical, social and cultural implications of geoscience education, research and practice, and with the social role and responsibility of geoscientists in conducting their activities." [http://www.geoethics.org/]*

# Uncertainties & Wickedness

*"the largest source of uncertainty rest with human drivers, as not only social dynamics and shifts in the consumer attitudes are difficult to forecast, but the introduction of new, disruptive technologies are intrinsically unpredictable... [a] source of uncertainty is the prevalence of non-linear systems\* that can lead to abrupt changes... departing from the linear, smooth responses that are amenable to prediction\*\*...."* [Duarte 2014 p. 6]:



\* ... of

*\*) natural, social and governance systems.*

*\*\*\*) leading to wicked problems, and iterative, path-dependent and open-ended 'solutions'.*

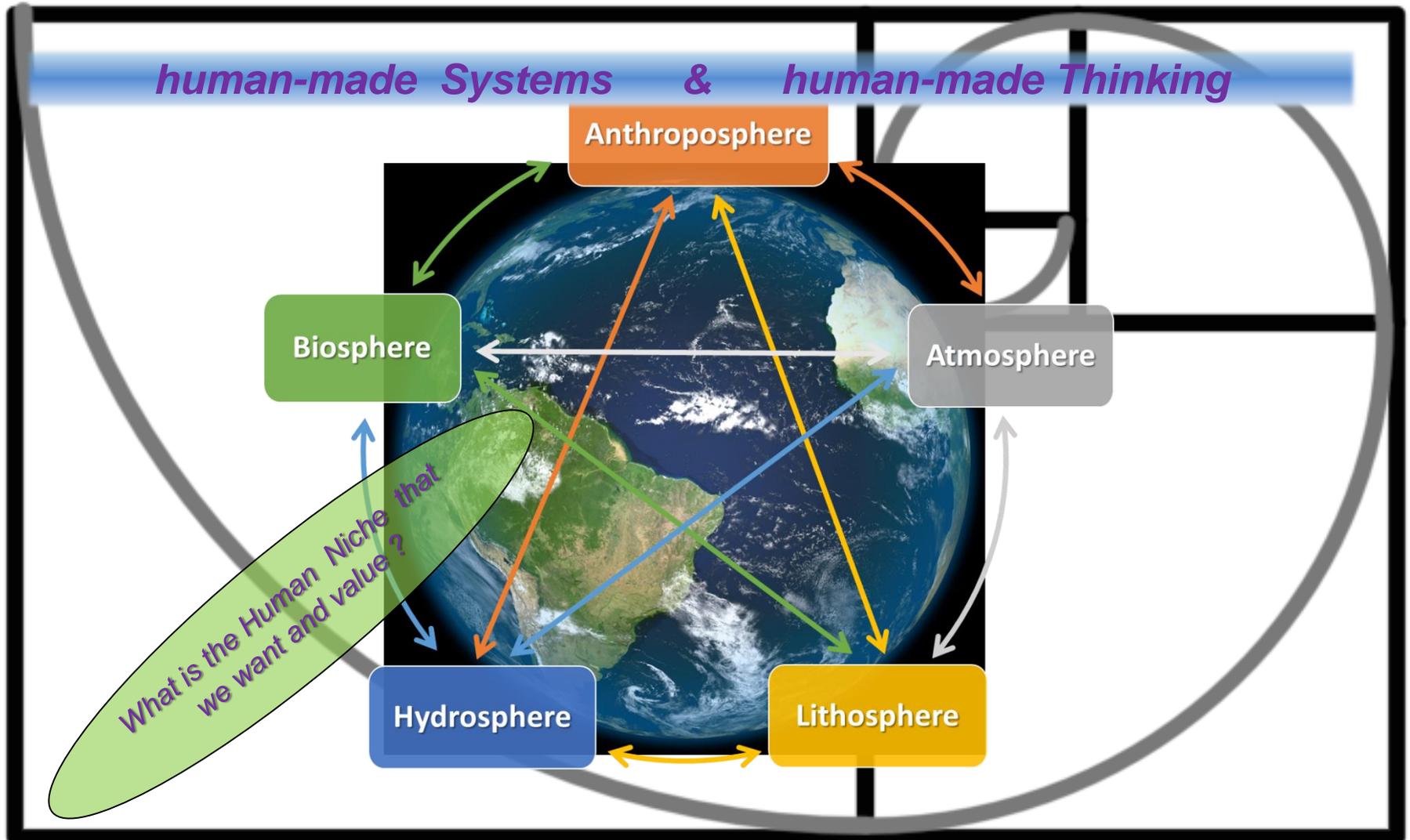
*Fluvia Favaro (Boulder)*

# What's the carry home message?

- Small-scale fisheries (SSF) operating within an industrialized exploitation of the sea (one specific global change process) provide a metric for the complexity of anthropogenic global change in general.
- It (SSF) also highlights that sustainable governance of peoples' activities at planetary scales is a wicked problem - *be it for small-scale fisheries or mitigation of climate change*.
- Hence '*overall values, norms and principles that guide institutions and actions*' [\*] set an essential meta-order to iterate the way forward.
- Geoethical thinking is a contribution to develop such a meta-order for appropriate behaviours and practices, wherever human activities interact with the Earth system.

[\*] Chuenpadgee and Jentoft 2013, *Assessing Governability ? What's Next*. In M. Bavinck et al. (Eds.), *Governability of Fisheries and Aquaculture: Theory and Applications*. Dordrecht: Springer Netherlands. p. 344,

# What's key? The actor's thinking and deeds!



# References: People, Pictures, Papers & sources for "more"



## Credits Photos:

*Camille Clerc (Just Passing),  
Fluvia Favaro (Boulder),  
Madlen Gebler (Glimps of Heaven),  
Mingna Wang (Xishan sunset)*

*– accessed: imaggeo (EGU) -*

Biermann, F. (2014). *Earth System Governance - World Politics in the Anthropocene*. London: MIT Press.

<https://doi.org/10.2307/j.ctt1287hkh>

Bobrowsky, P., Cronin, V., Di Capua, G., Kieffer, S., Peppoloni, (2017). The emerging field of geoethics. In G. L.C. (Ed.), *Scientific Integrity and Ethics with Applications to the Geosciences* (pp. xx–xx). John Wiley and Sons, Inc.

Campbell, L. M., Gray, N. J., Fairbanks, L., Silver, J. J., Gruby, R. L., Dubik, B. A., & Basurto, X. (2016). Global Oceans Governance: New and Emerging Issues. *Annual Review of Environment and Resources*, 41(1), 517–543.

<https://doi.org/10.1146/annurev-environ-102014-021121>

Chuenpagdee, R., & Jentoft, S. (2013). Assessing Governability? What's Next. In M. Bavinck, R. Chuenpagdee, S. Jentoft, & J. Kooiman (Eds.), *Governability of Fisheries and Aquaculture: Theory and Applications* (pp. 335–349). Dordrecht: Springer Netherlands. [https://doi.org/10.1007/978-94-007-6107-0\\_18](https://doi.org/10.1007/978-94-007-6107-0_18)

Duarte, C. M. (2014). Global change and the future ocean: a grand challenge for marine sciences. *Frontiers in Marine Science*, 1. <https://doi.org/10.3389/fmars.2014.00063>

Galaz, V., Moberg, F., Olsson, E.-K., Paglia, E., & Parker, C. (2011). Institutional and Political Leadership Dimensions of Cascading Ecological Crises. *Public Administration*, 89(2), 361–380. <https://doi.org/10.1111/j.1467-9299.2010.01883.x>

Jentoft, S. (2014). Walking the talk: implementing the international voluntary guidelines for securing sustainable small-scale fisheries. *Maritime Studies*, 13(1), 16. <https://doi.org/10.1186/s40152-014-0016-3>



***Fibonacci sequence:***  
***0, 1, 1, 3, 5, 8, 13, 21, 34, ...***  
 **$F_n = F_{n-1} + F_{n-2}$**

**21**

**5**

**8**



**13**

***Thank You very much or your Attention***