

# Biohacking in Reverse: an exploration of human sustainability

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## Prelude

During The Piedmont project , my thinking about sustainability evolved from conceiving it as a series of single virtuous actions to more of an organizing perspective on the future of humanity and our relationship to the interconnected ecosystems around us. Within this new framework, I was able to view my work as a physician addressing human suffering in a much broader eco-contextual and multidisciplinary way.

Initially I had set out to design a course that simply integrated 'ecology' into the dominant Bio-Psycho-Social model of human illness; i.e. how environment/climate impact human mental health - when I began to explore further, it felt a bit reductionistic, predictable, staid and derivative- of course it would be expected that a psychiatrist would focus on mental health impact of the environment...I guess, I wished for a more meaningful approach that added to our understanding of human-environmental interactions.

...however, there was no precedent for the course I wanted to create...additionally, how could I make this relevant and accessible; to move from a purely informational /traditional /passive teaching to a perspective of effective action , potentially carving a new role for psychiatry and medical professionals as activists and advocates for a more sustainable human-ecologic relationship...

To this end, as I read more about sustainability, human ecology, eco-psychology, eco-philosophy and enviro-politics/economics, I realized that something more was possible: I began to integrate my longstanding interests in the DIY 'biohacking' movement- a philosophy of tinkering with existing biology to extend what a system can do. Through my experiences running a biohacking Meetup in NewYork City and interviewing a number of technologists, synthetic biologists, philosopher's and DIYers, I encountered post-humanist philosophy, the anthropocene concept and the notion of existential risk of global ecologic catastrophe. There it was, the link between humanity and the broader planetary ecosystem...

With this awareness, I began to form a theory of human health that shifted the focus from one of addressing pathology to one of optimizing 'wellbeing' - to harnessing our innate potential for health by returning to the natural - 'reverse - hacking'. It shifted the focus from 'synthetically' enhanced wellness to one that optimizes our innate potential, 'naturally'. In the exploration of the innate 'natural', I encountered the Gaia Theory and the notion of biophilia - the ancestral yearning for human-nature connection. This uncovered the stabilizing force of contemplative practices , Slow Theory, eco-collectivism and alternatives to traditional consumption.

I thus built the course ***BioHacking in Reverse: An Exploration of Human Sustainability*** that includes a number of vantage points , each with unique relationships to sustainability: biology, risk analysis, futurism, philosophy, design, anthropology ,sociology, economics and traditional activism - my hope is that it will inspire contemplation, debate and ultimately, transformation.

## Instructor Information

### Instructor

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## General Information

### Description

The explosion of interest in human enhancement via implants, sensors, smart drugs has certainly brought us closer to the fantasied ‘techno-human’ future where we never age, never get sick and where some can achieve optimal intellectual and physical performance. Certainly, progress in synthetic biology, brain computer interfaces and the -omics has opened up new possibilities for the human experience. However, this can come at a cost. With our potential entry into the anthropocene epoch, there is the existential risk of self-annihilation as we perpetuate natural disasters that threaten our planet and consequently, our very existence.

This course examines the evolution of the biohacking movement and explores its philosophical, moral and political implications for the sustainability of the human being and the biosphere. It will introduce the possibility of Reverse Hacking: a sustainable form of human evolution that revisits the definition of ‘natural’ and looks at movements that honour forward progress while embracing the natural rather than trying to outsmart it. We will visit notions of biophilia, the Gaia Theory and trace the evolution of the contemplative consumption movement as exemplified by the Slow theory of design/living/city and slow food. We will review the latest thinking on biophilic design, the evolution of eco-cooperatives and the degrowth movement. Together, we will examine the possibilities inherent in Reverse Hacking and how it can be utilized to foster human and planetary wellness.

### Expectations and Goals

At the end of this academic journey, I anticipate that you will be able to:

- Identify selective but central concepts in biohacking, post-humanism, biophilic design and the degrowth movement
- Explain how biohacking principles can be applied to human & planetary sustainability
- Appraise & critique different perspectives/approaches to human & planetary sustainability
- Formulate your own theory of ‘reverse’ biohacking as it relates to the human–nature relationship
- Coalesce your discoveries/thoughts/perspectives into writings for the online course magazine that will supplement your final policy brief for a local change project

### Class Format

Class sessions can include a) instructor presentation on the day’s topic b) group discussion on assigned readings c) experiential exercise and/or video d) skype-live guest interview e) orientation to subsequent readings f) field-trip

### Assignments

- **Student portfolio:** each student will keep a personal portfolio on the personal blog containing written work in class and include contributions to class online magazine as well as other assignments

- **Collaborative Online Magazine** on Biohacking in Reverse: Contribute to collaborative class ‘Blog-zine’ that will be converted into an online magazine at the end of the course
- **Ecologic Autobiography:** brief paper describing significant places, people, animals, and activities from your personal history that have influenced your relationship with the natural world
- **Reflection Journal-course diary:** both online and offline journal about class topics, reactions, thoughts, feelings, ideas about topics/discussions in and out of class.
- **Self-tracking / biohacking-in-reverse project:** choose personal behaviour and track for 10 days - choose a behavior you wish to change and reverse-hack it - write about it.
- **Weekly response essay** 300-500 words on class topics/recent readings/ news events posted to class discussion forum
- Various **Experiential sessions** in between classes that helps apply concepts of human-nature interaction
- **Field trip** : to illustrate the power of the commons to live sustainably and reconnect with human-nature-values
- **Local/Campus change project policy brief:** Find a human/environmental “wound” near your campus or home community and come up with a policy brief for helping to heal it

## Course Materials

Note: additional articles or supplemental materials will be uploaded to Blackboard or made available in class

### Suggested Foundational Texts & Online publications

- Mahon, Peter. *Posthumanism: A Guide for the Perplexed* , 2017
- *The Next Step: Exponential Life*. Madrid: Turner, 2017.
- Jacques, Peter. *Sustainability: The Basics*. 2015.
- Pais, Ana P, and Carolyn F. Strauss. *Slow Reader: A Resource for Design Thinking and Practice*. , 2016.
- Agents of Alternatives - *Re-designing Our Realities. Issuu*. 2016
- D'Alisa, Giacomo, Federico Demaria, and Giorgos Kallis. *Degrowth: A Vocabulary for a New Era*. , 2015.
- Bardach, Eugene, and Eric M. Patashnik. *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*. , 2016.
- Food and Agriculture Organization of the United Nations *Writing Effective Reports: Preparing policy Briefs*
- Guidelines for critical reading in *Writing for Sociology 2<sup>nd</sup> ed Berkeley*

## Other helpful texts /websites

This preliminary resource list will be updated/expanded during the course and be available on the course website

- *The Next Step: Exponential Life*. Madrid: Turner, 2017.
- Thiele, Leslie P. *Sustainability* , 2016
- Kahn, Peter H, and Patricia H. Hasbach. *Ecopsychology: Science, Totems, and the Technological Species*. Cambridge, Mass: MIT Press, 2012
- *Slow Research Lab* [slowlab.net/](http://slowlab.net/) Accessed 27 July. 2017.
- *Research & Degrowth* [degrowth.org/](http://degrowth.org/) Accessed 27 July. 2017.
- *Center for the Study of existential risk* [cser.org](http://cser.org)
- *Future of Humanity Institute* [fhi.ox.ac.uk](http://fhi.ox.ac.uk)
- [edge.org](http://edge.org) | [longnow.org](http://longnow.org) | [edge.org](http://edge.org)
- *SENS Research Foundation* [sens.org](http://sens.org)
- *B-corporation* [bcorporation.net](http://bcorporation.net)

## Course Schedule

Week	Topic	Reading	Exercises
<b>Phase I: Fast Forward</b>			
1	Why are we here?	Syllabus <i>Rees, Martin. Curtains For Us All?   Edge.org. 2017</i>  Guidelines for critical reading in <i>Writing for Sociology 2<sup>nd</sup> ed Berkeley</i>	eco-biography
2	What is biohacking?	Selections from: Juengst, Eric, and Daniel Moseley. "Human Enhancement." <i>Stanford Encyclopedia of Philosophy</i> . Stanford University, 07 Apr. 2015. <i>biohackacademy Waag Society, Netherlands</i> <i>KevinWarwick.com Cyborg 2.0</i> <i>10 Things You Should Know About Biohacking. Listverse. 18 May 2015</i>	Self-tracking/ change project outline Inspiration: <a href="http://brucelee.com/philosophies">brucelee.com/philosophies</a> <a href="http://bulletproof.com">bulletproof.com</a> <a href="http://bengreenfieldfitness.com">bengreenfieldfitness.com</a> <a href="http://grindhousewetware.com">grindhousewetware.com</a> <a href="http://biohackingbook.com">biohackingbook.com</a>  Response paper
3	PostHumanism / TransHumanism	Selections from : Mahon, Peter. <i>Posthumanism: A Guide for the Perplexed</i> , 2017 <i>The Next Step: Exponential Life</i> . Madrid: Turner, 2017.	Video: YaleUniversity. "Rosi Braidotti,." <i>YouTube</i> . YouTube, 02 Mar. 2017. Web. 28 July 2017. Response essay

4	<b>The demise of aging and the Singularity</b>	<p>Aubrey DeGrey : <i>Undoing aging with molecular and cellular damage repair</i>. In <i>The Next Step</i> 2017</p> <p><i>Death Is Optional - Conversation between Noah Harari and Daniel Kahneman</i>   <i>Edge.org</i>. Web. 30 July 2017.</p> <p>2015 : <i>What do you think about machines that think?</i> <i>Edge.org</i>. Daniel C. Dennett 2015</p>	<p>Video: selected sections from Aix*Marseill university Neuroethics - ethics of neuro-enhancement 2016</p> <p>Response essay</p>
5	<b>Guest lecturer [TBD]</b>	TBD	Reflection journaling continues
6	<b>Anthropocene &amp; Existential Risk</b>	<p>Zalasiewicz, J, C N. Waters, A P. Wolfe, A D. Barnosky, A Cearreta, M Edgeworth, E C. Ellis, I J. Fairchild, F M. Gradstein, and J Grinevald. "Making the Case for a Formal Anthropocene Epoch: an Analysis of Ongoing Critiques." <i>Newsletters on Stratigraphy</i>. 50.2 (2017): 205-226</p> <p>Szerszynski, Bronislaw. "The End of the End of Nature: The Anthropocene and the Fate of the Human." <i>Oxford Literary Review</i> 34.2 (2012): 165-84.</p> <p>Nick Bostrom <i>Analyzing Human extinction Scenarios and Related Hazards</i> <i>NickBostrom.com On Existential Risks</i></p> <p>Bostrom, Nick. "Existential Risk Prevention As Global Priority." <i>Global Policy</i>. 4.1 (2013): 15-31</p>	<p>Response essay/Your Biologic footprint calculator</p> <p>Video: Elon Musk ExpovistaTV. <i>YouTube</i>. YouTube, 15 July 2017. Web. 30 July 2017 [focus on risk of AI]</p>
<b>Phase II: Biohacking in Reverse</b>			
7	<b>Biophilia, Gaia Theory and ReWilding humanity</b>	<p>Selections from:</p> <p>Wilson, Edward O. <i>Biophilia</i>. Cambridge, Mass. : Harvard Univ. Press, 2003.</p> <p>Lovelock, James. <i>The Revenge of Gaia: Earth's Climate in Crisis and the Fate of Humanity</i>. New York: Basic Books, 2007</p> <p>Kahn, Peter H, and Patricia H. Hasbach. <i>The Rediscovery of the Wild</i>. Cambridge, Mass: MIT Press, 2013.</p>	<p>Video: idoportal.com movement culture</p> <p>Video: Rewilding and its place in the global development agenda George Monbiot ISSRPlymUni. <i>YouTube</i>. YouTube, 20 Jan. 2016. Web. 30 July 2017</p> <p>Nature immersion exercise</p>
8	<b>Slow living</b>	<p>Selections from:</p> <p>Agents of Alternatives - Re-designing Our Realities." <i>Issuu</i>. 2016 Web. 30 July 2017</p> <p>Slow Research Lab slowlab.net</p>	<p>Review Stuff that works chapter in Redesigning our realities to inspire change project ideas</p>

		Alastair Fuad-Luke Slow Theory: a paradigm for living sustainably?	Change project snippet
9	Field trip to eco-cooperative/ guest lecturer	Location TBD / Guest TBD Explore websites: <i>Cooperativea Integran Catalana cooperativa.cat/en/</i> <i>Global Ecovillage network ecovillage.org</i>	Execute a hands-on skill from <a href="http://primitive.org">primitive.org</a> and document for class Reflection journal
10	Biophilic Design	Selections from <i>Goldhagen, Sarah W. Welcome to Your World: How the Built Environment Shapes Our Lives.</i> , 2017. <i>Terrapin Bright Green.14 Patterns of Biophilic Design Improving Health &amp; Well-Being in the Built Environment</i> 2014. Web. 30 July 2017.	Video: "Timothy Beatley - Earth Optimism Summit 2017." <i>YouTube</i> . YouTube, 26 June 2017. Web. 30 July 2017. Response essay
<b>Phase III: Action</b>			
11	Contemplative Consumption & The Degrowth paradigm	Selections from: D'Alisa, Giacomo, Federico Demaria, and Giorgos Kallis. <i>Degrowth: A Vocabulary for a New Era.</i> , 2015.  "The School of Life. <i>Alain de Botton</i> . Web. 30 July 2017 including Epicurus on happiness, Status anxiety,	Video: Degrowth: A Vocabulary for a New Era by Giorgos Kallis,Ashish Kothari, Amita Baviskar." <i>YouTube</i> . N.p., 02 Dec. 2015. Web. 30 July 2017. Practice consumption in a different way Review policy change brief
12	Time, change project panel presentations & Blog-Zine synthesis	Selections from Bardach, Eugene, and Eric M. Patashnik. <i>A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving.</i> , 2016.  Parting wisdom from Wim Hof, Mark Divine, Dean Karnazes, Nigel Warburton, Donna Haraway, Barbara Muraca, Natasha Vita-More, Melanie Swan, Andrea Antonopoulos, Douglas Rushkoff, Sam harris, Lee Smollin...and more	Complete student portfolio , finalize policy brief and quiet reflection on our journey together

## Course Evaluations

Your final grade will be based on the following:

Weekly response essays	10%
Participation and attendance	15%

Self-tracking/hacking project	15%
Local/Campus change project	20%
In-class group presentations	10%
Portfolio final	10%
Blog-zine contribution	20%