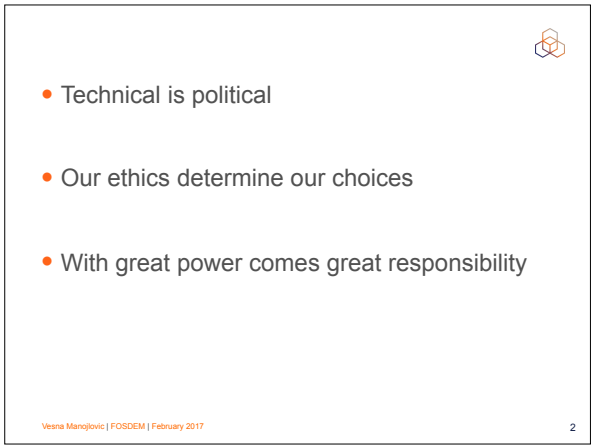
1

I'm a techno-addict.

- *world -> society ->* ***ethics -> applied sciences (technology) -> computer science/engineering -> hacking -> internet -> internet measurements -> ethics of internet measurement*** *-> society -> world*

[r] "your moral duties extend beyond the imperative that you personally do no harm: you have to try to promote the social good, too.
[r] your moral duties stem BOTH from your stature as a moral individual, AND also, from the professional communities to which you belong: cryptographer, computer scientist, scientist, technologist"
[r] "I am concerned with how we, as cryptographers and computer scientists, act in aggregate. Our collective behavior embodies **values**—and the institutions — we create do, too."

the COMMUNITIES we create embody our ETHICS

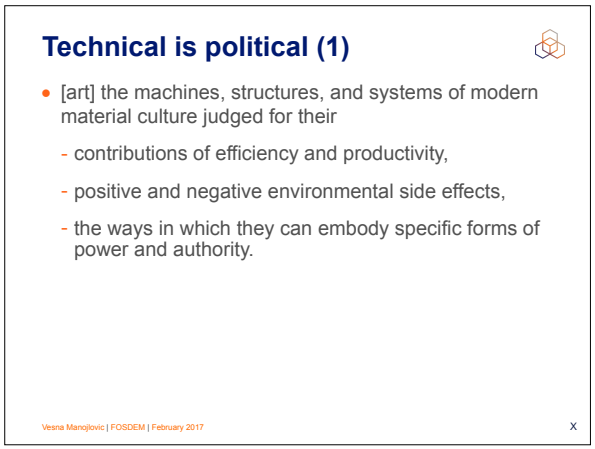


2

1) [art] "politics" are relative distribution of power / authority / PRIVILEGE in human societies
2) our decisions have consequences.
when designing technical systems, We are always making a choice; every decision determines the final outcome, our choices reveals our VALUES, our choices are based on our BIASES, our Ethical position
=> I wish for us to develop an ethically driven vision for what WE want to accomplish with our work." [r]
3) We, as hackers, used to be considered outsiders, on the **margins** of the society, but with the increase of the importance of the Internet, we have gained considerable power. [ensr]

[how] Software brings forth unprecedented changes in our lives, as extensions of the human mind and capacity to act upon and shape reality. We must apply thought and attention to software development and we share **responsibility**, as users and developers of software systems, to foster values of cooperation in the spirit of science, human cultures, and the diversity of life.

https://en.wikipedia.org/wiki/Uncle_Ben#.22With_great_power_comes_great_responsibility.22



3

technology is NOT politically neutral!
[art] By "politics," I mean arrangements / relative distribution of power and authority AND PRIVILEGE in human associations AND IN THE COMMUNITY; in two ways:
- the uses of technologies, intended or unintended, embody a systematic social inequality, contains explicit or implicit political purposes
- "ongoing social process in which scientific knowledge, technological invention, and corporate profit reinforce each other in deeply entrenched patterns that bear the unmistakable stamp of political and economic power. "

the very process of technical development is so thoroughly biased in a particular direction that it regularly produces results counted as wonderful breakthroughs by some social interests and crushing setbacks by others.
(Digital Divide; energy consumption; violent exploitation of environment & people; pollution from the electronic-waste…)
"Lewis Mumford gave classic statement to one version of the theme, arguing that "from late neolithic times in the Near East, right down to our own day, two technologies have recurrently existed side by side: one authoritarian, the other democratic, the first system-centered, immensely powerful, but inherently unstable, the other men-centered, relatively weak, but resourceful and durable".
[groente] The apparent neutrality of science and technology means little more then it being devoided of all value, it is neutral only insofar that it appears fully amoral. This may hold in the case of science in-and-of-itself, insofar as it remains strictly in the realm of the theoretical, but technology materializes this theory, gives it an agency and thereby places it in the realm of the practical, a concern of ethics.
[u] Is it our high technology that gives our civilization its invasive, self-replicating, mechnical forward drive? In itself, and technology is "infectious" only as other useful or impressive elements of culture are; ideas, institutions, fashions too, may be self-replicating and irresistably imitable.

Technical is political (2)

- [r] Technological ideas and technological things are not politically neutral: routinely, they have strong, built-in tendencies. Technological advances are usefully considered not only from the lens of how they work, but also why they came to be as they did, whom they help, and whom they harm.

4

technology is NOT politically neutral!
[r] just because you don't take an interest in politics, doesn't mean politics won't take an interest in you.
[tor] "**Technocracy** is a term used by political scientists and technology scholars to describe the view that political problems have technological solutions, and that those technological solutions constitute a kind of politics that transcends what are wrongly characterized as "traditional" left-right politics." / "Rather than a staff composed entirely of technologists, any project with the potential to intercede so directly in so many vital areas of human conduct should be staffed by at least as many with political and legal expertise as it is by technologists. It should be able to articulate its benefits and drawbacks fully in the operational political language of the countries in which it operates. It should be able to acknowledge that an actual foundation of democratic polities is the need to make accommodations and compromises between people whose political convictions will differ. It needs to make clear that it is a political project, and that like all political projects, it exists subject to the will of the citizenry, to whom it reports, and which can decide whether or not the project should continue. Otherwise, it disparages the very democratic ground on which many of its promoters claim to operate."
(wrong) characterization of **law** or **politics** *(by techies)*: these are trivial matters not even up for debate…
[r] since cryptography is a tool for shifting **power**, the people who know this subject well, like it or not, inherit some of that power. As a cryptographer, you can ignore this landscape of power, and all political and moral dimensions of our field. But that won't make them go away. It will just tend to make your work less relevant or socially useful.
[ensr] "persons who have the skills and knowledge to technically alter the environment or collect data from users can be considered to be relatively more **powerful** than the average Internet user. "

5

Why this talk? I used to have a dream - a dream where science, engineering, programming, Internet and hacking would make the world a better place Now, after 20 years of working with these technologies, I am afraid that these are actually destroying the world.
my utopian dream i-> THE LARGE BRIGHT SIDE OF THIS DIAGRAM - is becoming more and more like a dystopian nightmare -> THE LARGE DARK SIDE OF THE DIAGRAM and I am wondering - where did it go wrong?
This is why I started studying ETHICS - , and started QUESTIONING - which are the underlying assumptions, VALUES, biases, that has brought us into this situation - they are AT THE AGES, on the BORDERS between these two sides, on the GREY AREAS.
Grey-area = ETHICS! Values! Moral judgement! Reasons behind the choices we make! Unconscious biases; Points of View;

Yang = White = Positive = Techno-optimism = Utopia [u] "Bright, dry, clear, strong, firm, active, aggressive, lineal, progressive, creative, expanding, advancing, and hot."
Ying = Black = Negative = Techno-pessimism = Dystopia [u] "dark, wet, obscure, weak, yielding, passive, participatory, circular, cyclical, peaceful, nurturant, retreating, contracting, and cold."
[art] Optimists: "A long lineage of boosters have insisted that the "biggest and best" that science and industry made available were the best guarantees of **democracy, freedom, and social justice.** The factory system, automobile, telephone, radio, television, the space program, and of course nuclear power itself have all at one time or another been described as democratizing, liberating forces. "
((Pessimists: total surveillance, economic inequality, exploitation, pollution, animal extinction, climate change, oppression, nuclear destruction))
* Nobel-prize winner [r] "But science, the exercise of the supreme power of the human intellect, was always linked in my mind with **benefit to people.** I saw science as being in harmony with humanity. I did not imagine that the second half of my life would be spent on efforts to avert a **mortal danger to humanity created by science**."
* [groente] (optimist) Where once technology was aimed at liberating humanity from the toils of nature,
(pessimist) it has now grown to be part of an apparatus aimed at controling all of nature, humanity included. Its logic is that of control and domination, leaving no space for human reason or intervention outside of the processing of streams of data that are the objectified and quantified observations regarding the world around us.

I am a recovering techno-optimist.

Ethics in Science & Technology

6

I will do this talk in 3 parts:

introduction, example, advices

- introduction to ethics , and a problem-statement: dilemmas
- ***ethics -> applied sciences -> computer science -> hacking -> internet -> internet measurements -> ethics of measurement internet***
- example of RIPE Atlas - how did we address these dilemmas
- *how to go BEYOND technology,*
    - *so that we play our appropriate part in the symphony of life*

/wiki/Portal:Ethics

Ethics

edit

Ethics (via Latin *ethica* from the Ancient Greek ἠθική [φιλοσοφία] "moral philosophy", from the adjective of ἦθος *ēthos* "custom, habit"), a major branch of philosophy, is the study of values and customs of a person or group. It in simplest terms is the philosophy on how to act. It covers the analysis and employment of concepts such as right and wrong, good and evil, and responsibility. It is divided into three primary areas: *meta-ethics* (the study of the concept of ethics), *normative ethics* (the study of how to determine ethical values), and *applied ethics* (the study of the use of ethical values).

7

https://en.wikipedia.org/wiki/Ethics_of_technology

Practical Ethics

- "Philosophy Meets Internet Engineering" [ensr]
- Consequentialism
  - Utilitarianism
  - Act Consequentialism / Rule Consequentialism
- Deontology
- Virtue Ethics ("telos")
- Principlism
  - respect for autonomy, beneficence, non-maleficence, justice
- Pluralism and casuistry

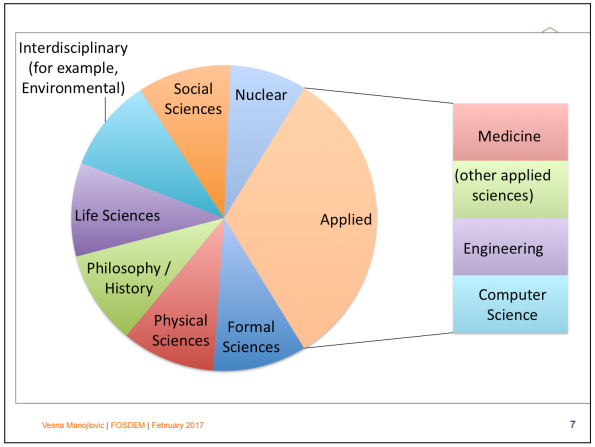
8

3 distinct philosophies:

- are the ends good - ends justify the means
- are the means good -
- are the actors good

3 ways to mix them:

- just focus on these principles
- combine multiple approaches
- consider case-by-case, use practical examples



9

Neutral: this is science - categories - modern, western

Techno-optimism: "the "biggest and best" that science and industry made available were the best guarantees of democracy, freedom, and social justice. The factory system, automobile, telephone, radio, television, the space program, **(fertilizers, pesticides)** and of course nuclear power itself have all at one time or another been described as democratizing, liberating forces. " [art]

"Technological optimists believe that technology makes life better. According to this view, we live longer, have more freedom, enjoy more leisure. Technology enriches us with artifacts, knowledge, and potential. Coupled with capitalism, technology has become this extraordinary tool for human development. At this point, it is central to mankind's mission. While technology does bring some unintended consequences, innovation itself will see us through." [r]

DANGEROUS, because

- "unbridled technological optimism undermines the basic need for social responsibility."
- they do not see their own bias
- they do not see any need for ethics, because everything they do is by definition "good" because "technology *is* good" in itself.

[tech]

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Ethical Dilemmas!
Medical sciences: Hippocratic Oath, Nuremberg trials
Technical: Nuclear bomb & energy / Russel-Einstein Manifesto / Engineering ethics
https://en.wikipedia.org/wiki/Nuclear_ethics / https://en.wikipedia.org/wiki/Engineering_ethics
Environmental sciences : Silent Spring / animal rights
Techno-pessimists:

- dangers of nuclear attacks or accidents
- extinction of insects, animals and humans
- medical experiments of animals and humans

Photo credits:

https://www.flickr.com/photos/vaxzine/3462671065/in/photolist-6gZ6tg-8Wq3Mx-6h4gt3-dVW5sG-6h4gwh-6h4gvS-6i4bko-9WHAVU-BiBTM-6n27L8-oUkYeJ-8yVfe6-9psd3s-nRFmmW-paezb-nUb9MT-56GXgZ-efAFGB-6gZ6kg-a33AqS-8E5x23-6h4gxQ-arvWqh-6avaYw-6SMTcs-55UYDR-qp93Bm-namWq2-em8KKx-4azf4g-6gZ6rM-4WcUw7-di3D9a-jeVgze-bBNcqZ-njWo7L-di8hEY-dm4Zkh-6gZ6r7-4vgjJv-BKLKAY-efvTSR-5ddkfd-GnVHvW-5iZJKT-rfwD41-7F1YeB-fdj1jA-fyeTdE-8CJwW4

https://commons.wikimedia.org/wiki/File:F._Arcaeus,_pages_from_'A_most_excellent_and_compendius_...'_Wellcome_L0002260.jpg

[art] the need to maintain crucial technological systems as smoothly working entities have tended to eclipse other sorts of moral and political reasoning .. (even) involving the sacrifice of civili liberties…
once nuclear power plants have been built and put in operation, the kinds of reasoning that justify the adaptation of social life to technical requirements pop up spontaneously.

Modern Sciences Ethical Dilemmas

- Artificial Intelligence
- Nanotech
- Cryptography
  - Cyberpunks
- Cyberspace Manifesto
- Human Rights in Internet Protocols

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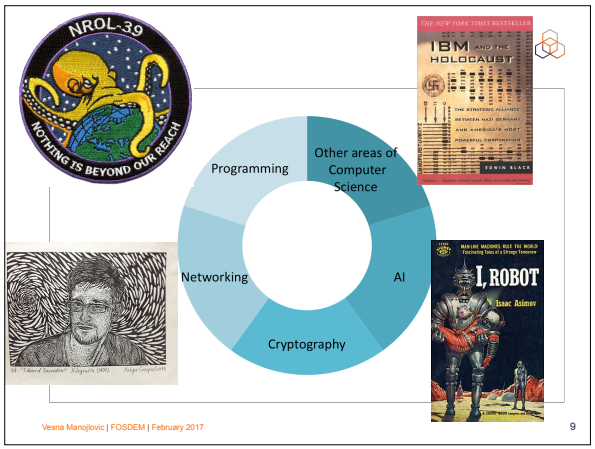
11

http://ethics.calpoly.edu/nanoethics/bad.html

https://www.flickr.com/photos/jimstr/2977755032



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12

computer science created the technologies that underlie our communications infrastructure, and that are now turning it into an apparatus for surveillance and control;

Images:

https://en.wikipedia.org/wiki/IBM_and_the_Holocaust#/media/File:IBM_and_the_Holocaust_(cover).jpg
By Source, Fair use, https://en.wikipedia.org/w/index.php?curid=26970588

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https://commons.wikimedia.org/wiki/File:Chaos_Communication_Camp_2007_-_Cypherpunks.JPG

[r] Cryptography can be developed in directions that tend to benefit the weak or the powerful.
[r] History teaches that extensive governmental surveillance becomes political
in character. … domestic surveillance … served as a mechanism to protect the status quo and neutralize change movements.
… (there is) loss of individual privacy; I am far more concerned with what surveillance does to society and human rights. Totalized surveillance vastly diminishes the possibility of effective political dissent. And without dissent, social progress is unlikely.

“Free software” Values

- individual freedoms
  - to use the software as you wish ;
  - to study the program and how it works (perusing its source code) ;
- at a collective level:
  - the freedom to distribute exact copies of the program, so you can help your neighbor ; and
  - the freedom to modify the source code and distribute these modified versions under the same conditions
- From “Software Freedom your Way” [how]
  - *Code is Politics*

13

https://gnu.org/philosophy/free-sw

Programming is Political

- “Programming is Forgetting” [p]
  - Language is political
  - “The Politics of Transcription”
- “Do Artefacts Have Politics?” [art]
- “Code Is Politics” [how]
- Crypto is political [r]
- The Personal is political

14

- [p] “Every practice, whether technical or artistic, has a history and a culture, and you can’t understand the tools without understanding the culture and vice versa. Computer programming is no different.”
- **Re-examine our Biases , assumptions, attitudes, values => ETHICS**
- (I am part of) Hackers Culture -> Free Source -> Open Source
- (I became aware of the) Critique of Hackers Culture -> Tech INDUSTRY
- **(…Recognising flaws, becoming disillusioned -> growing up, becoming mature)**
- “the values embedded in our tools end up being expressed in the artifacts that we make with them.”
- (see also: Do Artefacts have politics?)
- “programming is an extension of Western logical positivism,”
- “Bias in computer systems exists because every computer program is by necessity written from a particular point of view”
- “The world (the reality), which consists of analog phenomena infinite, (variable, mysterious) and unknowable, is reduced to the repeatable and the discrete.” (so we can analyse it and reason about it)
- “That interpretive choices are always made in the act of transcription that reflect the biases, the attitudes, and the needs of the transcriber”

[r] (paraphrase) “cryptography/PROGRAMMING / ENGINEERING can influence **power** relations.

I suspect that many of you **see no real connection** between **social, political, and ethical** values and what **you** work on.” -> I want to show you that y**our work HAS POLITICAL INFLUENCE .**

- => solutions -> slide in Section III

15

Photo: https://www.flickr.com/photos/adulau/8442476626

[u] “The symbol which Trickster embodies is not a static one. It contains within itself the promise of differentiation, the promise of god and man. For this reason every generation occupies itself with interpreting Trickster anew. No generation understands him fully but no generation can do without him...for he represents not only the undifferentiated and distant past, but likewise the undifferentiated present within every individual.... If we laugh at him, he grins at us. What happens to him happens to us.”

[groente] “The hacker's playful curiosity and desire to express creativity within the computer-imposed framework of formal logic transcends code into poetry. The rational, objective understanding of software development through the methods and mechanisms of computer science are replaced by the subjective interpretations of what has been revealed in the process of creation.”
It has a sense of ambiguity to it that comes with exploring the unknown rather then forcing it into predetermined structures. It sets a path of self-determination in the finding of Truth through the application and development of technology.
“**Note** that this potential does not make hacking an instant recipe for liberation or revolution.
There is a dialectic link between hacking and the modern scientific approach to technology. On the one hand, as scientific and technological progress creates more complex devices and software, the hacker gets more to play with, more to explore and subvert. On the other hand, the moment a hack is discovered, it is subject to being enframed, either by 'fixing' the bug from which it was spawn or by incorporating the technique into the normative engineering practices
All potentiality that is revealed in the hackers' explorations will be objectified.
The time inbetween discovery and enframing provides us with a **margin** of play,

=>> (move to end) Hacking needs to be disruptive so we may create a more wide-spread understanding of technology that goes beyond utility, control and domination.

Hackers Ethics

Levy's Hacker Ethic

- Access to computers should be unlimited and total.
- All information should be free.
- Mistrust authority—promote decentralization.
- Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race or position. or gender
- You can create art and beauty on a computer.
- Computers can change your life for the better.

16

There are multiple sources & versions: **Wikipedia**: Sharing, Openness, Hands-On Imperative, Community and collaboration: https://en.wikipedia.org/wiki/Hacker_ethic
Peka Himanen: passion, creativity, tribe https://en.wikipedia.org/wiki/The_Hacker_Ethic_and_the_Spirit_of_the_Information_Age
Steven Levy : https://en.wikipedia.org/wiki/Hackers:_Heroes_of_the_Computer_Revolution

- Access to computers should be unlimited and total.
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- Hackers should be judged by their hacking, not criteria such as degrees, age, race, sex, or position
- You can create art and beauty on a computer
- Computers can change your life for the better

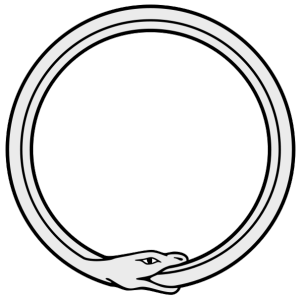
[p] Allison Parish: http://opentranscripts.org/transcript/programming-forgetting-new-hacker-ethic/

17

[ensr] In transitioning from industrial to information economies, **computing technologies** have come to pervade most aspects of **personal, organizational and social** life.
This development led to a steadily growing IMPORTANCE of the ethics of computing technologies.
computing technology encourages **innovative** uses OF technical artefacts, which IS **FASTER** THEN the development of **laws** designed to govern it, creating governance vacuums.
Because of these emerging uses of **computing**, there are increasingly blurred lines between computer ethics and medical ethics, technology ethics or environmental ethics.
&& it raises new ethical questions related to issues such as privacy, surveillance, autonomy or ownership.
broad range of fields including, philosophy, law and social sciences; ***cryptography***,
[r] "your moral duties extend beyond the imperative that you personally do no harm: you have to try to promote the social good, too.
your moral duties stem BOTH from your stature as a moral individual, AND also, from the professional communities to which you belong: cryptographer, computer scientist, scientist, technologist"

scientists and engineers have an obligation to select work that promotes the social good (a positive right), or, at the very least, to refrain from work that damages mankind or the environment (a negative right).10 The obligation stems from three basic truths: that the work of scientists and engineers transforms society; that this transformation can be for the better or for the worse; and that what we do is arcane enough that we bring an essential perspective to public discourse. [r]
Computer Ethics:

Ethical Dilemmas of The Internet



18

Internet ethics - dilemmas

https://backchannel.com/the-end-of-the-internet-dream-ba060b17da61#.t4cidyhio

[tech] https://www.boundary2.org/2016/08/what-technology-do-we-really-need-a-critique-of-the-2016-personal-democracy-forum/

[ensr] "Internet as socio-technical system

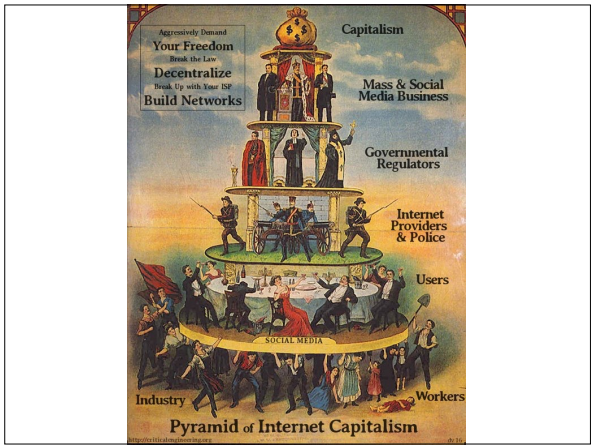
The Internet has become an important backbone and central nervous system for many diverging parts of society, commerce, culture, and government. Therefore, the Internet needs to be considered not as merely a technical system, but as a sociotechnical system, in which humans and technical artefacts interact in a complex and dynamic information environment.
This system is technically designed and mediated by a relatively homogeneous group (technical, highly educated, male, Caucasian, from economically developed countries), where design decisions likely embody the **ethic (and biases)** of these groups.
It is unlikely that the group responsible for the technical design, subsequent experimentation, and maintenance of the Internet fully understand the relevant social norms, social rules (e.g. laws and regulation), political contexts and its sensitivities of the diverse Internet user base."
=> solution: ASK QUESTIONS!!!
http://networkcultures.org/blog/publication/no-11-the-ends-of-the-internet-boris-beaude/
"Originally conceived as a space of freedom, the **Internet** has become the world's largest panopticon and freedom of expression is subject to surveillance and supervision on an unprecedented scale. The utopian theories of collective intelligence have been undermined by a growing tendency towards commercial exploitation. A small group of companies profit from the majority of online activities. Even the robustness of the Internet itself is now at stake, with vulnerabilities increasing and many organizations, governments and individuals targeted by malicious cyber attacks.
Drawing upon critical insights on a range of current issues such as surveillance, NSA and privacy, Boris Beaude demonstrates that the Internet should no longer be considered a neutral or secure support. Beaude also formulates new proposals for enabling the Internet to survive the clash of special interest groups and remain a

19

What does the techno-pessimist notice when taking a critical look at the Internet "industry":

1) energy consumption
2) violent exploitation of environment & people
3) pollution
   - from the electronic-waste
   - as consequences of the energy production & use
   - from the transport needed for its operations

(not the least flying around the world of conference-goers ;-)



20

Internet was supposed to model the decentralisation, make communication & organising easier, bring freedom, spread knowledge, end enable sharing of knowledge.
Instead, we have this: pyramid…
oppression & violence
- perpetuating status quo;
- exploitation & dominance of people who are contributing to its operations
- deepening of inequalities (economic, gender, racial, national);
- reinforces existing power structures, hierarchies & centralised systems (of patriarchy, racism, economy, finance, industry, media, corporations, governments…)
- rich get richer: Sillicon Valey is a new Wall Street; Apple not paying tax; Google&Facebook being richer then many countries

Internet be-came from the systems of oppression : neo-liberal capitalism, militarism, "science", and industry;
based on exploitative myths of growth and progress,
and it is perpetuating structural violence that is characteristic of these systems of oppression that gave birth to it

[tech], [art] , [David Graeber, Derrick Jensen, Freddy Perlman, Heather Marsh]

21

DIGITAL DIVIDE

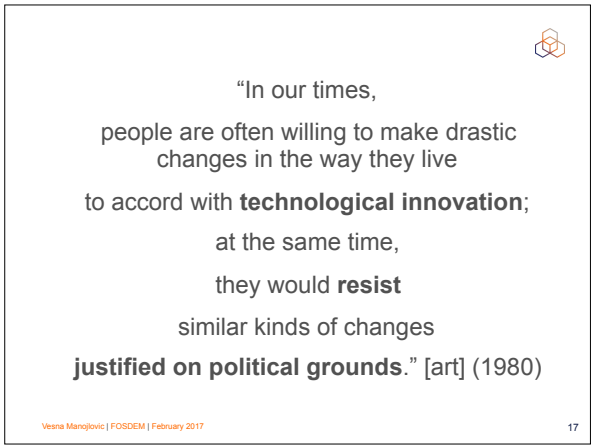
Internet is deepening the divide between 1st & 3rd world:

For the first-world: shiny data-centres and server-farms (cloud ;-)

For the 3rd world: children working in mines for precious metals, and sifting through OUR poisons discards and waste

22

[r] ubiquitous surveillance is incompatible with freedom, democracy, and human rights
[art] In our times people are often willing to make drastic changes in the way they live to accord with technological innovation at the same time they would resist similar kinds of changes justified on political grounds.
If for no other reason than that, it is important for us to achieve a clearer view of these matters than has been our habit so far.
Activists & civil-libertarians: *https://ssd.eff.org/en/module/problem-mobile-phones*
Conspiracy-theorists & preppers: *http://endoftheamericandream.com/archives/cell-phones-are-tracking-devices-that-governments-police-big-corporations-and-stalkers-can-use-to-easily-track-your-movements*
[art] It is characteristic of societies based on large, complex technological systems, however, that **moral reasons** other than those of **practical necessity** appear increasingly obsolete, "**idealistic**," and irrelevant. Whatever claims one may wish to make on behalf of **liberty, justice, or equality** can be immediately neutralized when confronted with arguments to the effect: "that's no way to run a railroad (or a communications system)"
"the need to maintain crucial technological systems as smoothly working entities have tended to eclipse other sorts of moral and political reasoning .. (even) involving the sacrifice of **civili liberties**… "
In Ayres's words, "Once the risks of plutonium theft become real rather than hypothetical, the case for governmental infringement of protected rights will seem compelling."
After a certain point, those who cannot accept the hard requirements and imperatives will be dismissed as **dreamers and fools.**
[r] But a creeping surveillance that grows organically in the public and private sectors, that becomes increasingly comprehensive, entwined, and predictive, that becomes an instrument for assassination, political control, and the maintenance of power…

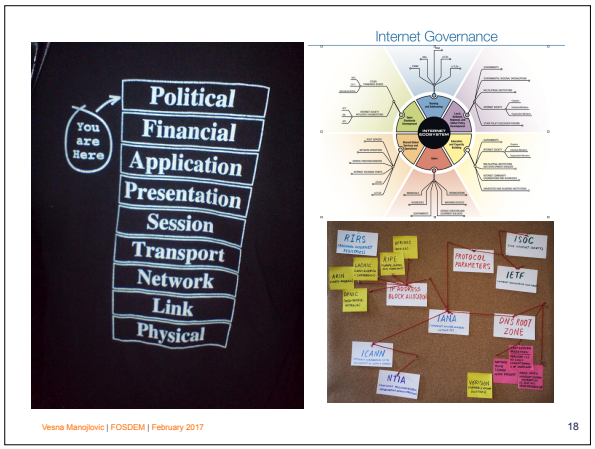


23

Mobile phone as a tracking, spying device?!

if the government suggested that we carry a device on us all the time, that can be used to determine our location, listen to our conversations, look into our photos, send a copy of our exchanged messages to them - we would refuse, and protest against such a suggestion.

"mobile phones" which are just such devices, but since then are a product of UNQUESTIONED "technological innovation", we accept them, and gladly!!



24

"Coding and encoding rights in internet infrastructure" Stefania Milan, Niels ter Oever

https://wiki.techinc.nl/index.php/Internet_Governance_and_hackers

https://wiki.techinc.nl/index.php/User:Becha/InternetPlumbing

Internet Measurements Ethics

- Internet as socio-technical system
- Responsibilities resulting from power imbalances
- Meaningful informed consent
- Weighing risks, benefits and values for an ethical analysis
- Status of easily accessible data
- Not condoning potentially unethical research methods

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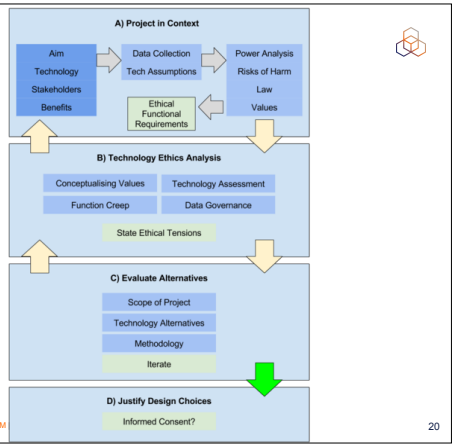
"Internet as socio-technical system

The Internet has become an important backbone and central nervous system for many diverging parts of society, commerce, culture, and government. Therefore, the Internet needs to be considered not as merely a technical system, but as a sociotechnical system, in which humans and technical artefacts interact in a complex and dynamic information environment.
This system is technically designed and mediated by a relatively homogeneous group (technical, highly educated, male, Caucasian, from economically developed countries), where design decisions likely embody the ethic of these groups.
It is unlikely that the group responsible for the technical design, subsequent experimentation, and maintenance of the Internet fully understand the relevant social norms, social rules (e.g. laws and regulation), political contexts and its sensitivities of the diverse Internet user base.
IT IS NOT ENOUGH TO APPLY "VIRTUE ETHICS" (claim that, if you are a good person, that should be enough to satisfy the Users)
Responsible researchers have many more duties, such as

- to inform their data subjects and users about the risks and benefits of a system. - - AND TO
- INCORPORATE ETHICS INTO DESIGN OF THE INTERNET protocols, technologies, software, policies.
- weight risks, benefits & values in the ethical analysis of



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we all love diagrams :)
these are the questions to consider before you start your research project.
http://networkedsystemsethics.net/index.php?title=File:IRM.png

RIPE NCC, RIPE Atlas, Ethics in Measurements

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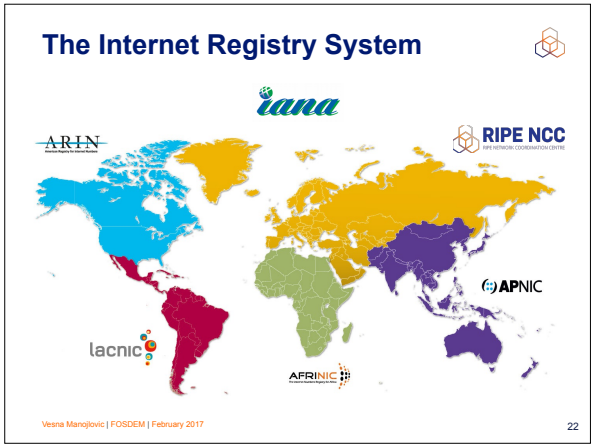
a concrete example: how did we embed ethical considerations into the system of network measurements?



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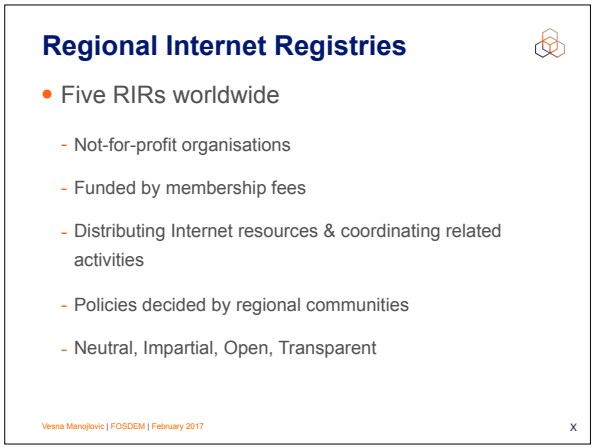
This is how the Internet Registry system is distributed over the whole world.

IANA is the central Internet number resource repository from which each RIR gets its resources.

Some RIRs also have NIRs (National Internet Registry). NIRs are organisations that provide registry services in line with the RIR to meet particular geographical needs, like JPNIC in Japan or NIC Brazil in Brazil.

Non-profit, Neutral, Impartial, Open, Transparent, accountable to & governed by the communities we serve



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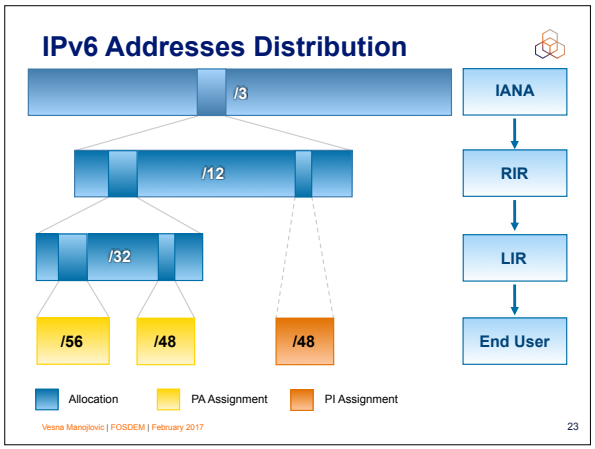
The RIPE NCC is one of the five Regional Internet Registries that provide services to the Internet community around the world.

The five RIRs have the same characteristics:
- not-for-profit organisations: they are not out to make money, only to keep the Internet running
- they are funded by the members, who pay a fee
- they operate based on policies made by the communities from each region
- the five RIRs adhere to the same principles:
  - Neutral & Impartial: they do not recommend or favour anybody
  - Open & Transparent: all RIPE NCC activities and services are openly defined, discussed and evaluated by RIPE NCC members and the RIPE community



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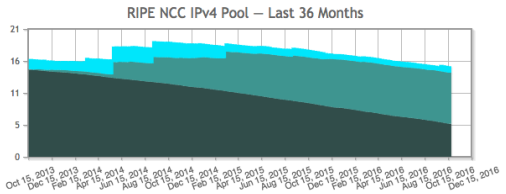
Only one 8th of the whole IPv6 space is in use at this moment.
The RIPE NCC gets a /12 from the IANA.
This /12 is further chopped into allocations that are /32 or larger.
For the PI assignments, the minimum size is /48.

IPv4 Available pool



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RIPE Atlas

From Wikipedia, the free encyclopedia

RIPE Atlas is a global, open, distributed Internet measurement platform, consisting of thousands of measurement devices that measure Internet connectivity in real time.

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Most Popular RIPE Atlas Features

- Six types of measurements: ping, traceroute, DNS, SSL/TLS, NTP and HTTP (to anchors)
- APIs to start measurements and get results
- Powerful and informative visualisations
- CLI tools
- Streaming data for real-time results
- New: “Time Travel”, LatencyMON, DomainMON
- Roadmap shows what’s completed and coming

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Measurements Platforms Comparison

Platform	Flexibility	Coverage	Blocking resistance	Main use
PlanetLab [16]	High	Low/Medium	Medium	Network measurements
Atlas [18]	Low	Medium/High	Medium	Network measurements
M-Lab [6]	Low	High	Medium	Network measurements
Tor [5]	Medium	Medium	Low	Low-latency anonymity
OONI [10]	High	Low	Medium	Interference analysis
Herdict [11]	Low	Low/Medium	Low	Interference analysis
OpenNet [14]	Low	Medium	High	Interference analysis

Table 1: Comparison between several popular filtering analysis platforms.

- "Global Network Interference Detection over the RIPE Atlas Network" (FOCI14)

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Ethics built into design of RIPE Atlas

- Active measurements only
  - No passive measurements
  - probes do not observe user traffic
- Data, API, source code, tools: **free and open**
- Kept set of measurements very limited, in order to prevent placing hosts in danger

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no passive measurements: we do not observe any user traffic;

- no "application layer" measurements;
- making the data open and publicly available for everyone to analyse;
- making participation easy and the "barrier to entry" as low as possible;
- making the devices inaccessible to 3rd parties, so as to protect hosts;
- keeping the set of measurements very limited, in order to prevent endangering hosts;
- deliberately not making the goal of the measurements platform one of detecting censorship, malicious blocking of Internet traffic, or other interference - in order to not put probe hosts in danger of oppressive political regimes - while accepting that some conclusions of those activities can be made based on the analysis of RIPE Atlas measurements data;
- all of our APIs are open and public, documented and available;
- all the code produced at our hackathons is released on GitHub with FLOSS licenses.

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a probe in someone's home, and a mandatory cat photo

Ongoing RIPE Atlas moral dilemmas

- 2013: Opening-up source code
- 2014: Keeping “non-public” measurements available
- 2015: Not allowing HTTP measurements to random targets
- 2016: Security audit

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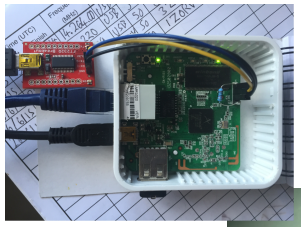
Already presented at FOSDEM: releasing the code in 2013.

Another example is: every time they “hacked” a probe, they followed “responsible disclosure” security procedures, and informed us first, so that we can fix the bugs before they become public.
When we were moving from prototype towards production service, we held a discussion with the community and came up with “Terms and Conditions” that respect the privacy of hosts, and which clarify expectations and responsibilities between us. All hosts need to agree to them before becoming part of the system:

Hackers involvement



- Responsible disclosure

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Probes at hackerspaces

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https://labs.ripe.net/hackathons

Join next hackathon: 20-21.4.2017, Amsterdam

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RACI

RIPE Academic Cooperation Initiative

- Students and researchers:
  - Present your Internet-related research at RIPE Meetings
  - Complimentary tickets, travel and accommodation
  - Topics: network measurement and analysis, security, IPv6 deployment, BGP routing, Internet governance, peering and interconnectivity
- ripe.net/raci

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RIPE Labs

INNOVATIVE INTERNET TOOLS AND IDEAS

SHARE EXPERIENCE | SHOWCASE TOOLS | PRESENT RESEARCH

- Publish your research or use case
- Reach out to RIPE Community
- Read about latest analysis or conferences
- labs.ripe.net

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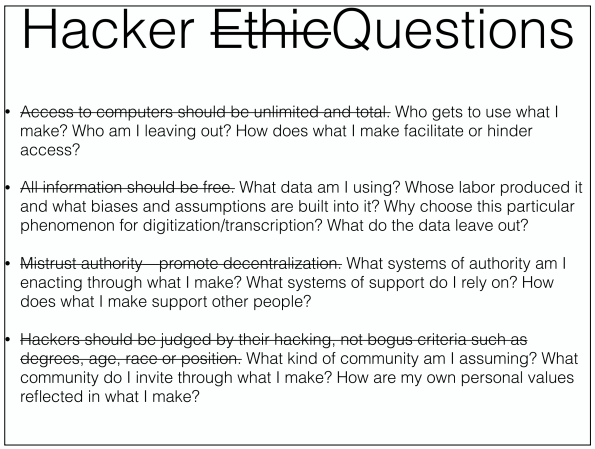
- question everything, but most: your own assumptions

Regard all models as suspect, Be introspective [r]

- embrace alternatives, embrace different ways of thinking, embrace conflict - and solve it in a non-violent ways!

(Be open to diverse models. Regard all models as dialectical.[r])

- work not on and for the systems of domination, control, exploitation .. but on systems for **inclusion, support, protection**



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- [p] “what you can do is recognize and be explicit about your own point of view and the assumptions that you bring to the situation.”
- what I want to do is I want to foster a technology culture in which a high value is placed on understanding and being explicit about your biases about what you’re leaving out, so that computers are used to bring out the richness of the world instead of forcibly overwriting it.”

[groente] Hacking needs to be disruptive so we may create a more wide-spread understanding of technology that goes beyond utility, control and domination.

- ***NOTICE, be aware, recognise, LEARN MORE ABOUT IT (from other sciences, mostly the ones diametrical to computer science: psychology, anthropology, history, palaeontology …)***

45

[ensr] This system is technically designed and mediated by a relatively homogeneous group (technical, highly educated, male, Caucasian, from economically developed countries), where design decisions likely embody the **ethic (and biases)** of these groups.

[tor] s/ tor/hackerspaces ; s/technology/patriarchy ; ’s/democracy/equality/

=>> [groente] Hacking needs to be disruptive so we may create a more wide-spread understanding of technology that goes beyond utility, control and domination.

[p]…

Networked Systems Ethics Questions

- **Context:** How would you describe the context within which data is collecte (or affected), or phenomena are measured?
- **Aims:** What are the aim and benefits of the project?
- **Benefits:** Why are the benefits good for stakeholders?
- **Purpose limitation:** Can the scope of data collection be limited whilst still
- **Politics and Power:** Are particular stakeholders empowered or disempow
- **Risk of Harm:** Could the collection of the data in this study be reasonably to any person's well-being?
- **Law:** Which bodies of law are likely to be applicable to the operation of the
- **Values:** Which values will the project conceivable impact?
- **Burdens:** Who carries the burden of harms or impacted values, and how?
- **Technology Ethics:** Can the harms and impacted values be traced to par the project?
- **Function Creep:** Does the project potentially set a precedent for unethical

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http://networkedsystemsethics.net/

"Through a set of targeted questions, guidelines should make engineers

- **aware** of divergences in social contexts, as well as
- **acknowledge** their own shortcomings in the knowledge of given contexts,
- in order to entice them to **gain more relevant local knowledge** to adequately assess the expected impact in potential target regions."

Question Everything!

"Technological advances are usefully considered

not only from the lens of

how they work,

but also

why they came to be as they did,

whom they *help*, and

whom they ***harm***." [r]

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"Moral.. Crypto.." Rogaway [r]

- ◁ Attend to problems' **social** value. Do anti-surveillance research.
- ◁ Be introspective about **why** you are working on the problems you are.
- ◁ Think twice, and then again, about accepting military funding.
- ◁ Regard **ordinary people** as those whose **needs** you ultimately aim to satisfy.
- ◁ Use the academic freedom that you have
- ◁ Be open to **diverse** models. Regard all models as suspect and dialectical.
- ◁ Get a **systems-level view.** Attend to that which surrounds our field.
- ◁ Design and build a broadly useful cryptographic **commons**.
- ◁ Take adversaries seriously.

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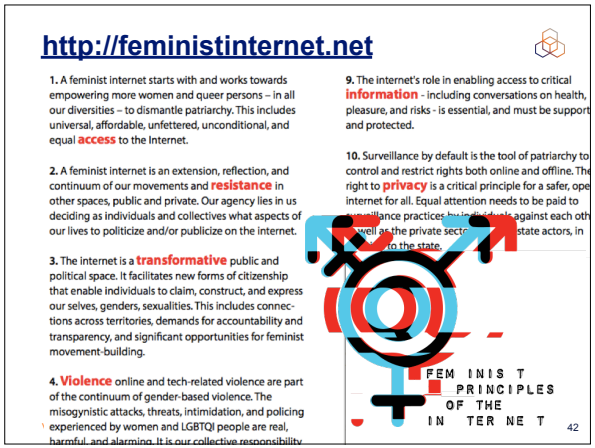
- http://www.onthecommons.org/magazine/elinor-ostroms-8-principles-managing-commmons

1. Define clear group boundaries.
2. Match rules governing use of common goods to local needs and conditions.
3. Ensure that those affected by the rules can participate in modifying the rules.
4. Make sure the rule-making rights of community members are respected by outside authorities.
5. Develop a system, carried out by community members, for monitoring members' behavior.
6. Use graduated sanctions for rule violators.
7. Provide accessible, low-cost means for dispute resolution.
8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system.

- https://en.wikipedia.org/wiki/Silvia_Federici

"she posits that primitive accumulation is a fundamental characteristic of capitalism itself—that capitalism, in order to perpetuate itself, requires a constant infusion of expropriated capital.
Federici connects this expropriation to women's unpaid labour, both connected to reproduction and otherwise, which she frames as a historical precondition to the rise of a capitalist economy predicated upon wage labor. Related to this, she outlines the historical struggle for the commons and the struggle for communalism. Instead of seeing capitalism as a liberatory defeat of feudalism, Federici interprets the ascent of capitalism as a reactionary move to subvert the rising tide of communalism and to retain the basic social contract.
In the 1970s, Federici participated in the Wages for housework movement in New York, initiated firstly by Selma James.
She situates the institutionalization of rape and prostitution, as well as the heretic and witch-hunt trials, burnings, and torture at the center of a methodical subjugation of women and appropriation of their labor. This is tied into colonial expropriation and provides a framework for understanding the work of the International Monetary Fund, World Bank, and other proxy institutions as engaging in a renewed cycle of primitive accumulation, by which everything held in common—from water, to seeds, to our genetic code—becomes privatized in



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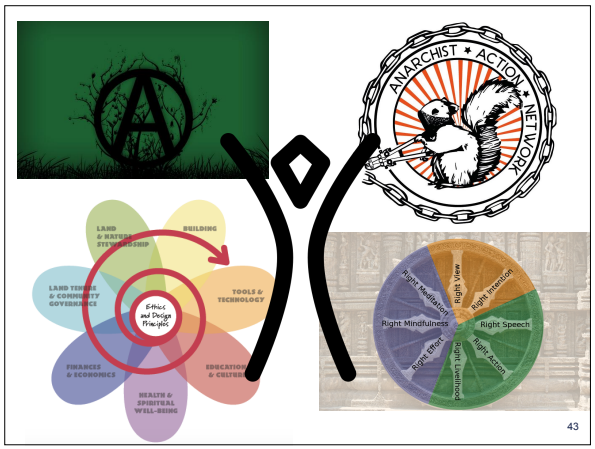
http://feministinternet.net

https://en.wikipedia.org/wiki/Feminist_ethics

https://en.wikipedia.org/wiki/The_personal_is_political

http://www.genderit.org/sites/default/upload/fpi_v3.pdf



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Green, Anarchist, Buddhist, Permaculture, Hippie Ethics & Principles

[art] "certain devices and systems are almost invariably linked to specific ways of organizing power and authority.
? the properties of large-scale systems require centralized, hierarchical managerial control?
The important question is: Does this derive from an unavoidable social response to intractable proper ties in the things themselves, or is it instead a pattern imposed independently by a governing body, ruling class, or some other social or cultural institution to further its own purposes?
Were there other conceivable ways of organizing these aggregates of people and apparatus? "

=> "decentralazied, democratic worker self-management" [art]

=> YES, like in the Dispossessed!! (Ursual Le Guin)

=> Cathedral and Bazaar : Free Software, Open Source SW , Peer2Peer

=> Internet - the network of networks! (or - not - "The Master Switch", Tim Wu!)

=== Burning Man Principles: Radical inclusion / Gifting / Decommodification / Radical self-reliance / Radical self-expression / Communal effort / Civic responsibility / Leaving no trace / Participation
=== Buddhist Ethics https://en.wikipedia.org/wiki/Buddhist_ethics
commitment to harmony and self-restraint with the principal motivation being non-violence, or freedom from causing harm.
=== Anarchism : solidarity / cooperation / direct action / autonomy / decentralisation / anti-capitalism / anti-authoritarian / anti-statism

Ethics of Nonviolence

- nonviolent resistance philosophy of Gandhi
- Martin Luther King Jr
- Non-violent Communication, Marshal Rosenberg
- Connecting in Empathy [ten]
- Positive freedom of connectivity, interaction and involvement
  - Instead of libertarian “freedom” as independence and self reliance
- This freedom comes at the price of greater responsibility
- *“ the intrinsic value of a network does not lie in the sovereignty and independence of its nodes, but in their connectedness,”*
- Empathy is willingness to engage with the Other, and willingness to enrich network with our contributions

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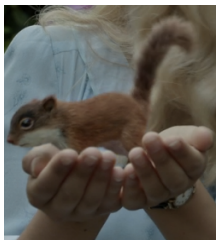
https://commons.wikimedia.org/wiki/File:The_Power_of_Non-violence.pdf

Responsibility

At a time when science plays such a powerful role in the life of society, when the destiny of the whole of mankind may hinge on the results of scientific research, it is incumbent on all scientists to be fully conscious of that role, and conduct themselves accordingly. I appeal to my fellow scientists to remember their responsibility to humanity.[210]

- … and to squirrels!



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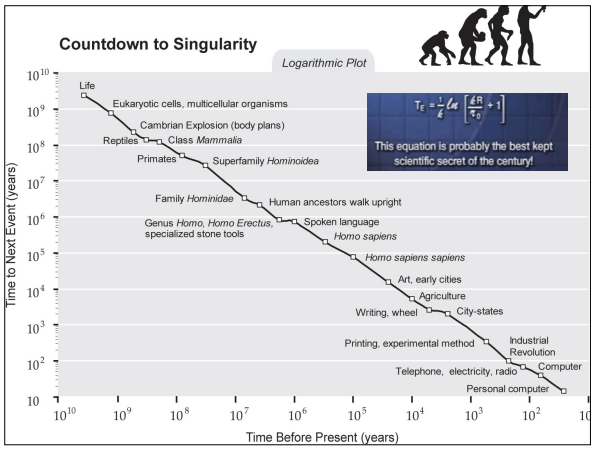

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* technological “singularity” in itself follows this fallacy of linear progress, and (exponential) growth, and expansion – that is the characteristic of “adolescent stage” in the development of the person – and of culture & society.

* exponential function is one of the fundamental laws of nature & ecology: exponential growth can not be sustained. all other species are limited in their consumption of resources by this law; they have found ways to balance their own existence with the existence of other fellow species in the same living systems, in the same environments.

* some human societies/cultures have found those ways too, over the last 1.000.000 years. only in the last 10.000 years some cultures have managed to forget those lessons, and to expand themselves to planetary boundaries — at the expense of all the other human cultures, and many plants & animals too. but that pattern of behaviour is impossible to sustain, and will end – which is Nature’s way of implementing this “law”.

Yin Society -> Science -> Internet

- a society predominantly concerned with preserving its existence (*and not endlessly expanding)*
- a society with a modest standard of living,
- conservative of natural resources,
- with a low constant fertility rate and
- a political life based upon consent;
- a society that has made a successful adaptation to its environment
- and has learned to live without destroying itself or the people *(or squirrels)* next door.
- ***Ursula Le Guin***

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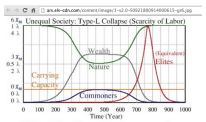
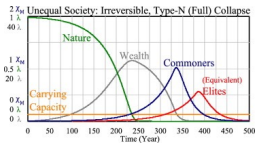
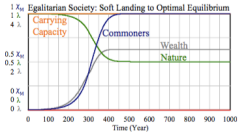
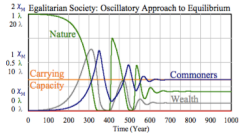
Critique of the belief in “linear historical progress”



a) Population collapse following an apparent equilibrium due to a small initial Elite population when $\kappa = 100$. This scenario also shows a different route to a collapse, in which, although Nature eventually recovers, population does not.







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critique of the belief in the “linear progress” :

e.g. “On Progress and Historical Change* , by Ada Palmer: http://www.exurbe.com/?p=4041

* my general comments: https://lists.puscii.nl/wws/arc/uncivilization/2017-01/msg00059.html

the colonialism and imperialism enabled the scientists and philosophers such as Francis Bacon (1620) to come up with the ideas such as “progress”, that lead to other “achievements” of medicine, natural sciences, engineering and finally led to industrialisation.

Therefore, I looked into the comparative history between the “Age of Enlightenment” and “Colonial history”:
https://en.wikipedia.org/wiki/Age_of_Enlightenment#Time_span
https://en.wikipedia.org/wiki/History_of_colonialism

Here is one possible combined picture:
http://www.essential-humanities.net/history-overview/world-history-timeline/

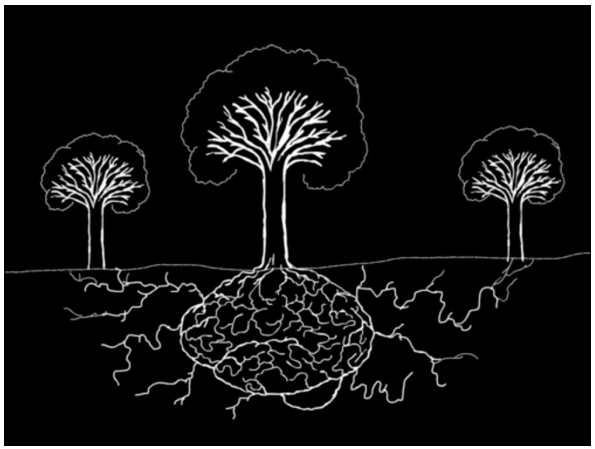
http://www.essential-humanities.net/history-supplementary/european-colonialism/

“Unfortunately, the human tragedies of colonialism are unspeakably vast. Many thousands of Africans, Native Americans, and other indigenous peoples throughout the world were killed (by violence or disease), enslaved, and/or oppressed in countless other ways (e.g. forced migration to barren land, outlawing of indigenous languages and traditions).”

critique from various perspectives:

- evolutionary outlook: there is no "linear progress"
http://en.wikipedia.org/wiki/Full_House:_The_Spread_of_Excellence_from_Plato_to_Darwin

- taking into consideration PRE-history, too: books by Daniel Quinn (Ishmael, Story of B, Beyond Civilization)
http://www.ishmael.org/Origins/Beyond_Civilization/
http://www.davidsheen.com/b/b1.htm (Daniel Quinn: pre-history of humans)



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Instead of “the internet of things”, what if there IS an “Internet of trees” ??

and there still will be, after we are gone…

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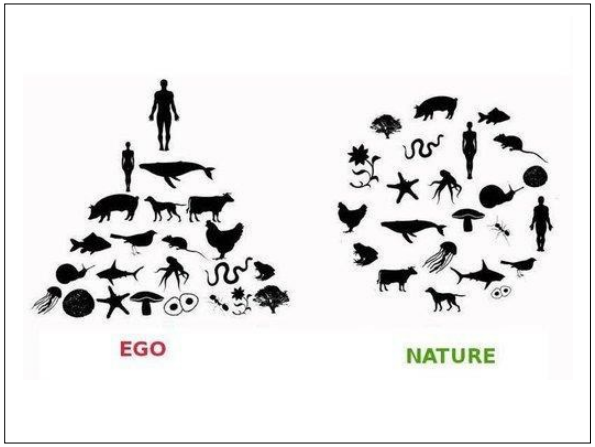
Instead of Artificial Intelligence, I believe in alternative definitions of intelligence, the one that is NOT anthropocentric!

For me, mycelium is part of the “planetary Internet” of fungi , plants and animals.



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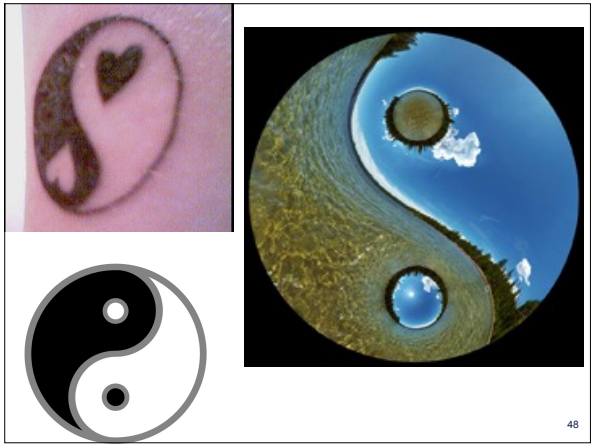
take our proper place in the symphony of Life, and play our proper part

some human societies have found the BALANCE, over the last 1.000.000 years.

only in the last 10.000 years some cultures have managed to forget those lessons, and to expand themselves to planetary boundaries — at the expense of all the other human cultures, and many plants & animals too. but that pattern of behaviour is impossible to sustain, and will end – which is Nature’s way of implementing this “law”.



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- question everything
- embrace conflict
- support diversity of Life

“To our friends”

Acknowledgements

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- [p] Allison Parrish: “Programming is Forgetting: Toward a New Hacker Ethic”
- [u] Ursula K. Le Guin: “A Non-Euclidean View of California as a Cold Place to Be”

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- More: Sebastian Olme , Heather Marsh,

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