

UNIVERSITY OF TWENTE.



An era of (neuro-) technological self-shaping and  
imperatives of self-determination  
&  
the value of autonomy support

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Core values of the EU and the Future

## Overview

- Self-shaping: concept, options, dimensions
  - Shaping children and adolescents
  - Self-shaping in high age
- Imperatives of self-determination: the costs
- A suggestion: Autonomy support

YOU have to choose:

happy,  
self-confident,  
extroverted,  
satisfied,  
relaxed,  
optimistic.....

awake,  
attentive,  
productive,  
active,  
vigilant...

easy-going  
with frightening situations,  
relaxed before important  
performances,  
generally more  
relaxed ...

trustful,  
social,  
cooperative,  
stress-resistant,  
less anxious....

decide by yourself  
**what** you  
remember  
and **how** you  
remember it

## In your hands as well:

- The right “cocktail“:
  - Which aspect in which intensity?
  - In which situation?
  - In interaction with which persons?



## Self-shaping

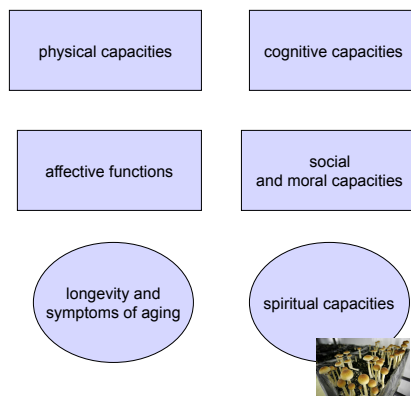
- Manifold dimensions
  - Targets
    - Physical, cognitive, affective, spiritual aspects
    - Personal and interpersonal aspects
  - Means
    - Behaviour, nutrition
    - Psychopharmacology
    - Surgery, DBS
    - Other technologies
    - ...
  - Motivations
    - Self-fulfillment
    - Coercion
    - ...

# Why is **Shaping** Possible at all?

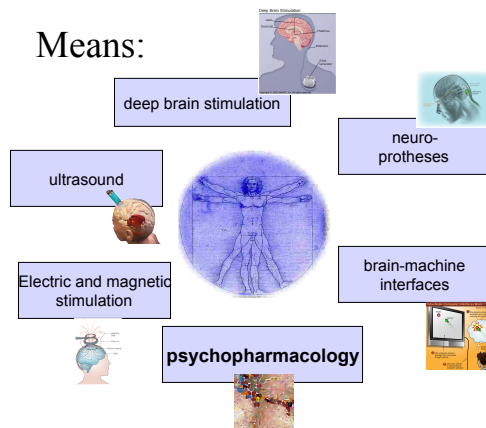
Two “hot“ topics: Plasticity and epigenetics

## Neuro-Technological Self-Shaping

### Targets:



### Means:



## Happy via Ultrasound?

### Good Vibrations: Mediating Mood Through Brain Ultrasound

- "With 2 megahertz those who were stimulated with ultrasound reported feeling 'lighter,' or 'happier,' a little more attentive, a little more focused and a general increase in well-being" (Hameroff et al, 2012, Tufail et al. 2010, 2011)



## DIY tDCS

### Transcranial direct current stimulation

Inside the Strange New World of DIY Brain Stimulation

BY GREG MILLER 05.05.14 | 6:30 AM | PERMALINK

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## Surgical Self-Shaping via DBS

- “Can we use DBS to make you smarter? Sure we can! (...) let’s tune up“ TED talk von Andres Lozano: *Parkinson's, depression and the switch that might turn them off*

## Shaping what you Perceive: Sensory Enhancement



Feeling directions – like birds....

(Nagel et al. 2005; König et al. in preparation)



## Brain-Machine Interfaces

and more from regenerative medicine....

## A Small Selection from the Online Pharmacy

- Vinpocetine - a cerebral enhancer;
- Get Smart™ - brain formula: Increase your IQ
- Idebenone - the ultimate anti-aging drug?
- SAME - the nutrient for mood, liver, heart, joint and brain protection
- Piracetam - the original nootropic
- NADH - the supervitamin body and mind energizer
- Growth Hormone - the real "fountain of youth!"
- 5-HTP - Prozac's true alternative
- The energy program at a glance - tired of being tired?
- Life Extension Mix - just 14 capsules a day!
- Centrophoxine - the anti-aging brain
- Galantamines - opens your memory, rescues brain cells: old becomes young
- Pregnenolone - reducing stress and increasing productivity
- Prescription not required ... (<http://smart-drugs.com>)

## Part of the Story: Self-Tracking to Control Oneself

- Going beyond digital health and not only to fight temptations
- “Promoted as a means to self-knowledge, self-improvement and self-control“ (Lanzing 2016)
- Quantified self: Strategies to get or keep full control about body and daily activities
  - New range of relations to the self
- “Every moment matters and every bit makes a big impact.”

## Shaping Children and Adolescents

- Trend from kindergarden to university
  - Massive increase in prescriptions (CDC 2013; UN Report 2013; Barner 2013)
    - Global consumption 1992-2011 from 4,2 to 51 tons
    - USA CDC study 2013: 11% ADHD prevalence
  - Increased acceptance
  - Social pressures
  - Off-label usage
- **Positioning of the AAN on Pediatric Neuroenhancement** (Graf et al. 2013, Neurology)
  - Consider developing autonomy
  - Sharpen awareness for social pressures, effects of advertisements
  - Risk: medicalisation of childhood



## Self-Shaping until the End

- “**You have the power to grow and strengthen your brain (...)** You can **greatly influence the vitality of your brain.** You can guard against brain disease. It's never too late to start the Brain Training Revolution, and **the scientific evidence is clear** - you will feel better and your body and brain will benefit.“ *The Brain Training Revolution: A Proven Workout for Healthy Brain Aging*

Nerium International announces new product  
that virtually everyone needs!

EHT<sup>®</sup> is for Anti-Aging Brain Health

Climb aboard our rocketship  
and share this exclusive, patented product  
around the globe

[www.CareerFlexibility.Rocks](http://www.CareerFlexibility.Rocks)

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## Ageing and Self-Shaping

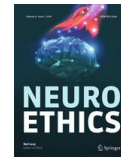
- Prevention – enhancement – anti-ageing
- **Imperative for self-determination**
  - Personalised risk profiles and prevention strategies
  - Expectations and responsibilities during ageing
  - Risk: Medicalization of ageing
- Questions:
  - How to balance individual and social interests?
  - How much autonomy is for the best of the individual?
  - How to reconsider “successful ageing“?
  - What is a good life in high age?

## Vivid Neuroethical Debate

- Safety
  - Side effects, long-term effects, addictive potential
- Justice
- Social pressures
- Normality and its value
- Authenticity
- Personal identity, personality
- Human nature, naturalness
- **Autonomy**



International  
Neuroethics  
Society 



## Imperative for Self-Determination

- Laudable developments in the last decades:
  - Focus on providing more autonomy to the individual
  - Empowerment of the individual
- Downside of increase in option-space:  
Body and mind to be determined by oneself at any point in life
- Suggestion: “It is all in **your** hands.”
- Task of self-optimization in the context of perceived risks  
“Risk makes its appearance on the world stage when God leaves it. Risks presuppose human decisions. They are the partly positive, partly negative, Janus-faced consequences of human decisions and interventions...completely impossible to externalize the problem of accountability“ (Beck 1986)

## Handling Growing Option Space for Self-Shaping

- Focus on individual responsibility
- Too much choice in existential questions
  - Information overload
  - More responsibilities
  - Change concerning praise and blame
  - Regret: real and anticipated
  - Opportunity-costs
  - Adaptation (treadmill-effect)
  - Frustration of high expectations
  - You cannot *not* decide
- **Right** for self-determination  $\neq$  **competence** for self-determination

## Rethinking Autonomy (again): Towards Autonomy Support

- Context: Decision-making in more and more individualized surroundings
  - Assumption: humans as self-sufficient, atomized rational actors
- Alternative: Relational accounts of autonomy (Meyers 2005; Friedman 2003; Mackenzie 2010; Nedelsky 1989; Christman 2004)
  - Assumption: Decisions are regularly influenced by the input of others
- Suggestion: Autonomy support
  - Structures supporting individuals to reach decisions aligned with their values, needs, and desires
    - Support **competence**

## Autonomy Support

- Socially embedded beings: social relations essential to our behaving, feeling, deciding
- Technologically embedded beings: technological surroundings embed us throughout life

Personal autonomy support	Technological autonomy support
e.g. via: <ul style="list-style-type: none"><li>• Communities</li><li>• Health care systems</li><li>• Regulatory systems</li></ul>	e.g. via: <ul style="list-style-type: none"><li>• Nudging / persuasive technologies?</li><li>• Assistive systems</li><li>• Decision-aids</li></ul>

- Challenge: Deciding which support is best for which purposes
  - **Trust** as key concept

## Outlook: Key Questions

- Improve understanding of decision-making
  - Which factors empower, which factors discourage?
  - Which role do different forms of relations play?
    - Consider cultural difference
- Find out: How much autonomy serves individuals' well-being?
- How can **trustful relations** (to persons, institutions, technologies) be developed or designed?
- What serves human flourishing in a social and technological surrounding?
  - **What do we really care about?**

Thank you for your attention!