Medical Technology

Possibilities, Problems and Profit.

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Questions to Consider:

- In what sense is medical technology a philosophical issue? Should we not simply let medical science and technologies continue to grow, and be simply judged and regulated by following 'evidence-based' practices?
- Despite the obvious benefits in reducing suffering, what challenges does medical technology pose to our meaningful human lives?
- How does medical technology promote medicalisation, and why is it a problem?
- Finally, does medical technology serve to promote and facilitate the current trend where medicine is dominated by economic considerations?

Medical Technologies

For the purposes of this lecture, I will focus on contemporary medical technologies rather than tracing a history of the development of medical technology. So, some examples:

- Pharmaceuticals. (antibiotics, antivirals, psychopharmaceuticals)
- Computers and digital communication systems (NBN, video conferencing) designed to help doctors in their clinical practice.
- Online databases through which to reference studies about effective therapies (Evidence Based Medicine)
- Laboratory equipment designed to facilitate human reproduction, genetic screening and manipulation. Blood tests, biopsies and other biochemical analysis.
- Organ transplantation technology and machines that prolong life (mechanical ventilators, dialysis machines)
- Personal devices that help to track bodily functions: Heart rate monitors, pedometers, fitbits, smart phone health apps.
- Implants, prosthetics and other devices (pacemakers, hearing aids, blood glucose monitors)
- Diagnostic equipment (ECG monitors, Magnetic Resonance Imaging machines) and the computers needed for tomography (producing images from these devices)

Some Clarifications…

- I am neither against our development and application of medical science nor medical technologies, either in medical practice or the lives of patients in general. It is not an argument against the use of medical science and technology, but an attempt to question how the dominance of medical technology has also transformed existential conditions of our meaningful human lives.
- Obviously, medical technologies mentioned have helped to reduce human suffering, managing pain, offering cures to diseases pre-modern medicine was helpless to address (e.g.. Syphilis) and offer relief and control over symptoms of chronic conditions that cannot be cured (diabetes, asthma etc.)

- HOWEVER, the suffering we experience in our human illnesses is not simply reducible to the physiological features or biomedical conceptualisations of disease. In short, we don't experience diseases, but rather we live through an illness, which is usually (but not always) attributable to (caused by) a medically defined disease or disorder.
- '…understanding human suffering in health care will in most situations need to proceed beyond medical body matters and into everyday life matters and issues concerning persons' self-understanding. New medical technologies pushing or changing the forms and limits of human self-understanding as such raise further questions of responsibility when they are tested or implemented on a societal level.' (Svenaeus, 2017, p. 5)
- I want to think through the *existential* impact of medical technology for human life

Thinking about Technology – Martin Heidegger's critique of 'technoscience'

- The distinctive character of modern technology is founded on the new science of the 17th century. As we explored in the lecture series last year, this tradition conceived of nature as ultimately expressible through geometry and mathematics: In other words, nature is taken as a collection of spatiotemporal objects subject to causal forces.
- This new kind of science is concerned with developing general laws that explain how these spatiotemporal objects and forces operate, and accordingly offers knowledge that tells us how to bring about a particular state of affairs. On this view, modern science promotes the control or mastery over nature. The hypotheses that are proposed as natural laws also necessarily inform us about how to employ them for our own purposes.

- Though modern technology was preceded by this new science, for Heidegger, the essence of technology is that it promotes and intensifies the controlling character inherent to this kind of scientific knowledge.
- On his account, technology reveals the world to us in a specific way, it ‘enframes’ nature as a ‘standing reserve’. That is to say, it transforms our perspective of ourselves and the world into a collection of precalculable forces that we can control and make use of as we will.

- In other words, technology is not just simply a means to an end, but changes how we understand ourselves and the world around us - It alters the goals that we pursue as well as the means through which we pursue them. Technology promotes an attitude wherein we see ourselves and the world we live in as objects, which are available to us as resources to make use of.
- In his famous example, modern technology changes how we see the river, which is now also a potential hydroelectric power source and water supply. In relation to medicine, he asks how how human beings may be instrumentalised, citing people becoming patients for the activities of the modern medical clinic.
- Human resources? Think of the way we speak about healthcare – numbers, costs, percentages

- Moreover the modern hospital is also a research institution: when we engage with modern medicine as patients, we become potential cases for further study and understanding. In this sense we are also conceived as a resource to help improve medical science.
- I think this is wonderful as a shared human enterprise – but what potential risk might there be?

Extending Heidegger's critique to medical technology - Svenaeus

- Fredrick Svenaeus has attempted to apply Heidegger's thinking about technology to question the potential impact of medical technology in medicine and human life more broadly.
- 'The enframing of a human being through medical science and technology takes place when the embodied complaints of the patient are taken out of the life-world context of human dialogue and replaced by medical-scientific analysis only' (Svenaeus, 2018, p. 79)
- In other words, medical technology tacitly promotes the priority (domination) of an abstract, biomedical perspective in medicine, in doctors and patients alike. On this model, patients are conceptualized as objects—diseased organisms.

Embodiment and Biological Mechanism

- What is our relationship to our bodies?
- In the phenomenological tradition, an important distinction has been made between the body taken as mere biological object and the lived body. We do not simply have our body, but rather we *are* our body.
- While our bodily structures make possible our projects and engagement with the world, we do not have full control over our body, and when we are injured or ill we may experience the body as something curiously alien, that resists our will and imposes challenges to our activity. In everyday life our bodily nature is not simply present to us in this way—we do not experience our body as a collection of biologically defined parts.

An example: Blushing

- ‘Someone blushes with shame and embarrassment. Can the blushing be measured? Blushing with shame cannot be measured. Only the redness can be measured, for instance, by measuring the circulation of blood. Then is blushing something somatic or something psychical? It is neither one nor the other. Phenomenologically speaking, we can easily distinguish between a face blushing with shame and, for instance, a face flushed with fever or as a result of going inside of a warm hut after a cold mountain night outside. All three kinds of blushing appear on the face, but they are very different from each other and are immediately distinguished in our everyday being-with and being-for each other. We can "see" from the respective situations whether someone is embarrassed, for instance, or flushed for some other reason.’ (Heidegger, 2001, p. 81)

- Simply put, the biomedical perspective of the mechanistic body cannot consider these differences in the somatic phenomenon of blushing. We do not experience the rush of blood as a mere increase in circulation to our face. We feel embarrassed, or attracted to someone, or ill with fever.

Disease or Illness?

- I now want to stop and consider a key point in the Philosophy of Medicine, the distinction between having a disease and the being ill.
- Diseases are conditions determined through biomedical classification (nosology), they may be monogenic, stemming from a single cause (bacterial infection) or multifactorial, representing a collection of physiological factors that, taken together, indicate a particular condition.

- However, what prompts us, in our everyday life, to visit doctors and ask for help? In the vast majority of cases, it will be the experience of illness, the feelings of pain, discomfort and alienation that disrupt our usually effortless taking up of the projects and activities that are meaningful to us.
- Even with the advent of preventative medicine, where no experience of illness prompts the medical encounter, the fundamental goal is clearly to avoid the future experience of illness for the patient.

Thinking through health

- ‘Health is not a condition that one introspectively feels in oneself. Rather it is a condition of being there (Da-Sein), of being in the world (In-der-Welt-Sein), of being together with other people (Mit-den-Menschen-Sein), of being taken in by an active and rewarding engagement with the things that matters in life. . . . It is the rhythm of life, a permanent process in which equilibrium re-establishes itself. This is something known to us all. Think of the processes of breathing, digesting and sleeping for example.’ (Gadamer, 1996, pp. 113-114)
- We might think about our experience of having balance, and losing it.

- ‘Without doubt it is part of our nature as living beings that the conscious awareness of health conceals itself. Despite its hidden character, health nonetheless manifests itself in a kind of feeling of well-being. It shows itself above all where such a feeling of well- being means that we are open to new things, ready to embark on new enterprises and, forgetful of ourselves, scarcely notice the demands and strains which are put upon us. This is what health is.‘ (Gadamer, 1996, p. 112)
- Crucially, ‘well-being’ in this example is not taken as a distinct psychological mood or feeling. It is an existential condition where we can do what matters most in our everyday routines.

- ‘Organisms have diseases, and these are certainly in most cases the cause of ill health, but only human beings living in the world are ill or healthy. Health and illness are consequently not phenomena analysable exclusively in the terms of science, but are evaluative concepts referring to the experiences, ambitions and abilities of human beings situated in certain contexts - lifeworlds.’ (Svenaeus, 2001, p. 68)
- ‘The phenomenological starting point which I will adopt and later expand upon in this study views science as a human activity carried out against the background of a pre-scientific meaning-pattern - a lifeworld. Science takes on meaning as a certain attitude towards the world: a specialized, abstract, theoretical way to view and construct the world that relies on the everyday, concrete meaning-patterns of the lifeworld which constitute its foundation.’ (Svenaeus, 2001, p. 45)

- Does that mean that we can be healthy and diseased? On this account, yes. While this might seem paradoxical, I think it can be understood by way of considering both chronic conditions, where one can never be ‘free’ from disease, and the presence of detectable conditions that have not yet manifested in embodied life.
- So, why do we place so much importance on the biomedical understanding of disease instead of illness?

Returning to embodiment and control… Modern Medicine

- 'Once we analyze a natural object into its component parts and interactions—that is, see how it is made—we can make it ourselves, or alter it in the desired directions. Herein lies the enormous power of modern medicine. We have learned to understand, remake or transform, components of the body-machine. When disease intervenes, we can intervene too… Yet the machine-model of the body has given rise not only to therapeutic triumphs but to limitations and distortions in medical practice… Insofar as the body is modeled upon a lifeless machine, the role of subjective experience in determining one's health history will tend to be overlooked. After all, a machine does not experience, does not inhabit an 'existential world'' (Leder, 1992, pp. 121-122)

- To treat patients on this mechanical account, doctors will use biomedical theories to perform a kind of bodily engineering, causally manipulating a patient's body according to biomedical hypotheses to cure or address symptoms of a disease. However, if this perspective is over-emphasized, doctors may not pay attention to the suffering a patient experiences in the breakdown of their everyday existence, that is, the disruption the meaning patterns they fundamentally live through.
- For Svenaeus, by promoting an understanding of human beings as biological objects, medical technology has facilitated the instrumentalisation of human life and particularly of our bodies.

- Instrumentalisation refers to the reduction of human beings and their bodies to means that can help us achieve our own ends.
- To understand this risk of instrumentalisation, I am going to extend these philosophical themes to some examples where our life has been dramatically reshaped by medical technology.

Controlling Reproduction

- The advent and refinement of birth control technologies has offered an incredible mastery over physiological reproductive processes and cycles. For example, advances in contraceptive technologies have made these more reliable, promoting the idea of 'family planning', where having children is a choice that we actively pursue.
- Moreover, developments in In Vitro Fertilization (IVF) have offered new possibilities for persons who struggle to fall pregnant, and has become a multi-million dollar industry. These technological potentialities have been extended even further through the use of surrogate to bear children, and the future potential of developing artificial wombs for IVF.
- Additionally, the genetic screening of embryos has been used in service of determining potential future disease risks, making it possible to choose to not take the pregnancy to term in light of these findings.

Changing the meaning of birth and children

- The control over selecting and now even editing the genes of our children reconfigures what it means to reproduce. For example, should all potential parents screen their unborn children for debilitating or otherwise undesirable conditions? On what grounds can we judge whether an identified disease in an embryo or fetus effects the worth of this potential human life?
- To take the example of downs syndrome, recent technology has allowed for early diagnosis of this condition in unborn children, and resulted in an increase in the number of abortions performed after these tests indicate a high chance of this condition. While people with DS may face more challenges in their lives, can we say that they would invariably suffer? Furthermore, would this assumed suffering necessarily makes these lives less important or worthwhile?
- Such existential questions, I claim, cannot be simply determined from within the scientific perspective of biomedicine. There is no 3rd person perspective, or god's eye view, that can measure and objectify the human values that are central to this complex issue.

Post-human potential?

- Moreover, recent advances in CRISPR/Cas9 gene-editing now reveal the very real possibility of directly manipulating the genetic structure of embryos. While such technology is still in development and faces powerful political opposition, authors such as John Harris have advanced arguments that claim human enhancement through genetic therapies is a moral imperative.
- In *Enhancing Evolution,* Harris uses an analogy with education to support his assertion, noting that parents already try to influence the characteristics of their children, hoping to cultivate particular values or abilities for them. Through raising them in a certain fashion, or promoting particular forms of education, we clearly already try to enhance our offspring.

- However, genetic selection represents an intensification of this control, and presents genetic disease risk as well as the presence of supposedly beneficial genetic traits as the properties of the future child considered merely as a biological object.
- 'The program designer carries out a one-sided act for which there can be no well-founded assumption of consent, disposing over the genetic factors of another in the paternalistic intention of setting the course, in relevant respects, of the life history of the dependent person. The latter may interpret, but not revise or undo this decision. The consequences are irreversible because the paternalistic interpretation is laid down in a disarming genetic program instead of being communicatively mediated by a socializing practice, which can be subjected to reappraisal by the person 'raised'' (Habermas, 2003, p. 64)

From biological objects to commodities

- The excess embryos that result from IVF techniques can be frozen, stored, and instrumentalised for stem cell research, further IVF research or for future use by the donor.
- Technology for surrogacy entails that functional wombs become discrete objects, and as such can be conceptualised on the level of a resource to be made use of, which *can* then be made into a market commodity.
- Women in developing nations such as India now have the option of becoming potential surrogates for wealthy individuals willing to pay for them to gestate implanted embryos, even having the birth according to a schedule.
- Without making a carte blanche judgment about this practice, I think that the potential for commercialisation of human beings as incubators highlights the concern over instrumentalisation Svenaeus has identified. It is a new potential that we cannot 'unsee', how it is used is a question we will have to answer

- Human reproduction has been transformed by medical technology – ultrasounds, IVF and genetic technologies have fundamentally changed how we understand the start of human life. Human surrogates and surplus embryos have the potential become a new kind of resource in our projects, as technologies reinforce a perspective of objectification and instrumentalisation.

Death and the possibility of instrumental organs.

- We are now able to prolong biological functions through ventilators and other devices, even when a person has no possibility of returning to awareness or their meaningful everyday lives.
- Even when defined as legally dead through 'brain death', since the 1970s we have had the potential to maintain the circulation of blood and functioning of other organs.
- 'To be legally brain dead, all function of both the upper and lower brain must cease. Because the heart will fail on a brain-dead person, certification of death by brain-death criteria (instead of circulatory criteria) will only be needed when the dead person's body functions are being maintained by an artificial ventilator.'

Goal of Palliative care?

- I hate to be the bearer of bad news, BUT… We are all going to die. ☺
- How do we want to die? Is the goal simply to exist for as long as possible, or are we instead concerned with dying well? Though of course invaluable, at the end of our lives some technologies may actually *prolong* our suffering rather than serving to alleviate it.

- The potential to maintain biological functioning in ‘dead’ persons has led to the question of whether we ought to harvest these organs. Organ transplants are in high demand, and the availability of transplants has been consistently outstripped by the need for transplant procedures for patients.
- Should we consider the organs of the dead merely surplus resources to help the living?

- ‘Yet the very borders between life and death, borders that are still so final, have become so open to negotiation and dispute. As, indeed, is the liveliness of all those entities such as tissues and ova, hovering between life and death, oscillating between vitality in a test tube or vat and information in a database or biobank.’ (Rose, 2007, p. 270)

- Advancements in life sustaining technologies and organ transplants have reconfigured how we think about human death.
- In particular, life sustaining technology aims at a different goal that that of reducing patient suffering at the end of life, and can extend such distress without hope of eventual alleviation.
- Additionally, life support technologies have complicated what it means to be dead, and made it possible to instrumentalise the bodies of the deceased.

The issue of Enhancement and Medicalisation

- The medical technology of pharmaceuticals has offered us the ability to influence human behaviors that were previously considered to be outside the realm of human illness, and thus medicine and healing. For example, we have medications to address baldness, menopause, sexual dysfunction etc.
- However, we might ask whether these technologies promote 'human enhancement', as opposed to the alleviation of suffering resulting from illness. Are they so different to cosmetic surgery, which has been accused of problematically endorsing sexism and ageism by promoting particular aesthetic ideals?
- We now have technologies that allow for some control over these conditions, which fundamentally changes how we understand our possibilities when we experience them.

- However, this concern over enhancement has been extended to consider how new pharmaceutical technologies have promoted the phenomenon of medicalisation.
- The *medicalisation* of human life is where previously ‘healthy’ behaviors, though usually socially undesirable, are reclassified as pathologies that can in turn be alleviated through medication.

Psychopharmacology and the DSM V

- Examples of how psychopharmaceuticals have promoted medicalisation through DSM – ADHD, anxiety, depression
- While there are certainly extreme examples of these conditions that pose dramatic challenges to everyday life, is there a risk of classifying people with undesired behaviors as fundamentally diseased?
- The disorders of the DSM can be understood to be contingent - earlier versions of the DSM included homosexuality as a disease, not abandoned until 1973.

- ‘Antidepressants and ADHD medications foster the ideal of a positive, in-control, energetic, and socially competent personality that is now possible to achieve by way of taking medication.’ (Svenaeus, 2017, p. 88)
- Rather than being merely abnormal, previously healthy behaviors are classified as mental disorders and are thus medicalised.

- As Svenaeus notes, the economics of modern medical research help facilitate this trend: the process of clinical trials requires a disorder, a collection of dysfunctional behaviors and traits, that these medications can address. Accordingly, the primary tactic of 'Big Pharma' has been to expand the range of pathologies to include conditions previously outside the realm of illness, health and thus medicine.
- By proposing that certain traditional human comportments or ways of existing are pathological, the boundaries of what counts as a medical concern are extended without invoking the idea that these medications are enhancement technologies.

- These technologies affect how we understand the goals of medical intervention and human life more broadly. If we cannot function at work or study due to anxiety, depression or lack of focus, we are confronted with the implication that these are personal, medical problems that we can (and should) take steps to address ourselves.
- But we may well ask whether this medicalisation obscures or conceals the way moods of anxiety and depression might be related to existential concerns? What if our work or relationship stresses are a result of their conflict with our core life values?

- At this stage I want to pose a potentially controversial question—it is always appropriate to relieve distress through these technologies?
- 'But I cannot separate this development [of modern psychiatric drugs] from the general instrumentalization of the living body which also occurs in the world of modern agriculture, in the economy and in industrial research. What does it signify that such instrumentalization now defines what we are and what we are capable of achieving? Does this not open up a new threat to human life? Is there not a terrifying challenge involved in the fact that through psychiatric drugs doctors are able not only to eliminate and deaden various organic disturbances, but also take away from a person their own deepest distress and confusion?' (Gadamer, 1996, p. 77)

- Can we simply choose to ‘opt out’ of medicalisation?
- ‘It is becoming increasingly difficult to pretend that there is a line of differentiation between interventions targeting susceptibility to illness or frailty on the one hand, and interventions aimed at the enhancement of capacities on the other. In the world of risk, susceptibility, prudence, and foresight, we see new practices and styles of judgment where identification of biological—genetic, neuronal, etc.—risk can switch the affected individual, or potential individual, onto circuits of compulsory treatment, constraint, and even exclusion.’ (Rose, 2007, p. 270)

- While I contend that psychopharmaceuticals can indeed genuinely assist persons in deep distress, we might also consider how existential conditions of distress and pain might be inappropriately concealed by these technologies. Once again, it is a matter of prudent and considered application, a question of *how* we use these new possibilities, rather than a simply accepting or rejecting this technology.
- However, as I argued earlier, the distinct character of modern technology is not neutral in this regard: it helps promote an instrumental view of ourselves in the scientific perspective, and can obfuscate these possibilities if we do not keep this tendency in view.

So, what about medical practice?

- I think it is important to note that doctors have frequently recognized some of the aforementioned problems with an over-technicised medicine.
- We might say that despite the increasing dominance of technology and biomedical science, the art of medicine, the humane engagement with patients, is still often present in quality medical care.

To think about it another way:

- ‘In medical science we encounter the dissolution of personhood when the patient is objectified in terms of a mere multiplicity of data. In a clinical investigation all the information about a person is treated as if it could be collated on a card index. If this is done in the correct way, then the data (*Werte*) all belong to the person. But the question is nevertheless whether the unique value of the individual (*Eigenwert*) is properly recognized in this process.’ (Gadamer, 1996, p. 81 [Svenaeus’ translation])

Metrics of Health: Personal Devices

- To briefly return to the theme of last weeks lecture…
- 'The discourse around wearable devices gives the impression of a radically new technology offering precise and unambiguous physical assessment: devices that reflect back the 'real' state of the body. Beyond the purely physical, a fundamental claim of wearable devices is that data will bestow self-knowledge: the kind of self-knowledge that will create a fitter, happier, more productive person.' (Crawford et al, 2015, p. 480)
- As I outlined above, however, these measurements represent a limited mode of understanding our human bodies, stripped of the meaningful context that we live in. While the numbers from these devices may offer some insight into the physical regularities of the body, this data will, in most cases, be of little concern to physicians who are ultimately tasked with helping their patients to recover and take up the projects and activities of their everyday lives.

- Returning to the earlier concept of health developed by Gadamer, personal fitness trackers and related apps help us to aim at a goal of health reduced to the progress towards increasingly optimised numbers: Steps walked, hours slept, kilojoules consumed etc. These mathematised goals do not encompass the condition of unimpeded activity where we are free to take up the projects and goals that matter to us most: health.

- ‘When the health-obsessed computer scientist Ray Kurzweil first attempted to engage a physician with his ultra-detailed concerns he was cut off by the doctor, who said ‘Look, I just don’t have time for this; I have patients who are dying that I have to attend to’’ (Ehrenreich, 2018, p. 67)
- ‘The increasing emphasis on the measured self has brought with it a range of capital-driven imperatives and standard-making exercises that seek to normalize and extract value from our understanding of ourselves, while making us ever more knowable to an emerging set of data-driven interests.’ (Crawford et al, 2015, p. 495)
- Not only does this information have limited value in relation to the concept of health I discussed at the start of this lecture, it opens the door for economic exploitation as our biomedical data is interpreted by algorithms and rendered into a commodity.

To Conclude

Medical Technologies have offered us entirely new possibilities for how to organise human practices, while at the same time promoting a biomedical understanding of the patient in terms of their biological makeup and metrics.

This perspective of objectification can tend to make patients and doctors alike lose sight of the fundamentally human condition of health. We instead focus on biomedical models of human functioning, and metrics such as blood pressure, steps walked, etc.

As we saw in the examples of IVF, organ transplantation and medicalisation, this objectified perspective can in turn be used to promote the instrumentalisation and economic exploitation of human beings and their bodily parts.

Works Cited

- ABC News (2019) "'*There is No Lung Left': Man told he is going to die by doctor on robot video*' 10 March, 2019https://www.abc.net.au/news/2019-03-10/us-man-ernest-quintana-learns-he-is-dying-from-doctor-on-robot/10887174
- Crawford, Kate, Jessa Lingel, and Tero Karppi. (2015) "Our Metrics, Ourselves: A Hundred Years of Self-Tracking from the Weight Scale to the Wrist Wearable Device." *European Journal of Cultural Studies* 18, no. 4–5: 479–96. doi:10.1177/1367549415584857.
- Ehrenreich, Barbara. (2018) *Natural Causes: Life, Death and the Illusion of Control*, London: Granta
- Gadamer, H.G. (1996) *The Enigma of Health: The Art of Healing in a Scientific Age*. Stanford University Press,
- Harris, John. (2007) *Enhancing Evolution: The Ethical Case for Making Better People*. New Jersey: Princeton University Press.
- Heidegger, Martin. (1977) "The Question Concerning Technology." in *The Question Concerning Technology and Other Essays*. Translated by W. Lovitt. New York: Harper and Row. Pp. 3-35
- Heidegger, Martin. (2001) *Zollikon Seminars: Protocols—Conversations—Letters.*Trans. F. Mayer and R. Asky. Evanston, IL: Northwestern University Press.
- Leder, Drew. (1992) "A Tale of Two Bodies: The Cartesian Corpse and the Lived Body." In *The Body in Medical Thought and Practice*, edited by Drew Leder. 17-35. Dordrecht: Springer Netherlands.
- Puping Liang, Yanwen Xu, Xiya Zhang, Chenhui Ding, Rui Huang, Zhen Zhang, Jie Lv, Xiaowei Xie, Yuxi Chen, Yujing Li, Ying Sun, Yaofu Bai, Zhou Songyang, Wenbin Ma, Canquan Zhou &, Junjiu Huang. (2015) "CRISPR/Cas9-mediated gene editing in human tripronuclear zygotes" *Protein and Cell,* 6(5):363-372 DOI 10.1007/s13238-015-0153-5
- Rose, Nikolas. (2007) *The Politics of Life Itself: Biomedicine, Power and Subjectivity in the Twenty-First Century.* Princeton, New Jersey: Princeton University Press.
- Rotabi, Karen Smith & Bromfield, Nicole Footen. (2012) "The Decline in Intercountry Adoptions and New Practices of Global Surrogacy: Global Exploitation and Human Rights Concerns" in *Afflilia: Journal of Women and Social Work*, 27(2):129-141
- Svenaeus, Fredrik. (2001) *The Hermeneutics of Medicine and the Phenomenology of Health: Steps Towards a Philosophy of Medical Practice*. Springer,
- Svenaeus, Fredrik. (2018) *Phenomenological Bioethics: Medical Technologies, Human Suffering and the Meaning of Being Alive*. London:Routledge