

SOCIOTECHNICAL ENVIRONMENTS

PROCEEDINGS OF THE 6TH STS ITALIA CONFERENCE 2016

EDITED BY
STEFANO CRABU
PAOLO GIARDULLO
FRANCESCO MIELE
MAURO TURRINI



SOCIOTECHNICAL ENVIRONMENTS

PROCEEDINGS OF THE 6TH STS ITALIA CONFERENCE 2016

EDITED BY
STEFANO CRABU
PAOLO GIARDULLO
FRANCESCO MIELE
MAURO TURRINI



**Sociotechnical Environments:
Proceedings of the 6th STS ITALIA CONFERENCE**

An open Access digital publication by STS Italia Publishing
Released: November 2017

ISBN: 978–88–940625–1–9

Publishing project: Paolo Magaudda
Editing and layout: Sergio Minniti
Cover design: Sara Colombo

Contact: Sts Italia Publishing, Via Carducci 32, 20123, Milano.
Mail: stsitalia.org@gmail.com

A pdf of this publication can be downloaded freely at:
<http://www.STSItalia.org>

The 6th STS Italia conference was organized by STS Italia with the support of the Department of Sociology and Social Research – University of Trento and the Cetcopra of the Université Paris 1 Panthéon–Sorbonne.



This publication is licensed under the Creative Commons: Attribution, Noncommercial, No Derivative Works – 2.5 Italian License (CC BY–NC–ND 2.5 IT).

TABLE OF CONTENTS

<u>EDITORS' INTRODUCTION</u>	I
<u>Performing Sociotechnical Environments: intersections of bodies, knowledge, artefacts and politics</u>	
<hr/>	
SECTION I	
<i>Environments in the Making. Politics, Interventions and Creativity</i>	
<hr/>	
<u>Exploring the Interface of Environmental Activism and Digital Surveillance</u>	3
<i>Diletta Luna Calibeo, Richard Hindmarsh</i>	
<u>Geo-social Movements by the Inhabitants of Fukushima: 'Solidarity in Fear' Vis-à-Vis the Risks after the Nuclear Accident</u>	19
<i>Rina Kojima</i>	
<u>Activism and Games. Exploring Boundaries</u>	37
<i>Ilaria Mariani, Andréa Poshar</i>	
<u>The Potential of New and Social Media for Environmental Activism</u>	55
<i>Richard Hindmarsh, Diletta Luna Calibeo</i>	
<u>Ecology of Technology and the Commodification of Inuit Country Foods</u>	71
<i>Alexander Castleton, Carlos Novas</i>	
<u>Latte e Lotte. On the Difficulty of Dairy Farmers, Vending Machines, Microbes and Cows of Becoming a Movement</u>	85
<i>Alvise Mattozzi, Tiziana Piccioni</i>	
<u>Decomposing and Reassembling Energy Grids as Socio-Technical Apparatuses</u>	101
<i>Dario Padovan, Osman Arrobbio</i>	
<u>A National Law as an Actor-network: How Guatemala's General Electricity Law of 1996 Shaped the Country's Environmental Conflicts over Hydroelectricity</u>	117
<i>Renato Ponciano</i>	

<u>Il ruolo della formazione nella messa in opera dell'Efficienza Energetica nel settore edile</u>	135
<i>Francesca Cubeddu</i>	
<u>Geo-Speculating with a Hyperaccumulator: A Former Mine in North-Rhein Westfalia from the Viewpoint of a Arabidopsis Halleri</u>	151
<i>Gionata Gatto</i>	
<u>#ViewFromTheOffice: Reconceptualizing the Workplace as a Cross-channel Ecosystem</u>	167
<i>Andrea Resmini, He Tan, Vladimir Tarasov, Anders Adlemo</i>	
<u>Eco-Art Projects: Semiotic Issues</u>	185
<i>Giacomo Festi</i>	
<u>The Connexion between Digital Body and the Universe</u>	199
<i>Sana Boukhris, Osman Miguel Almiron</i>	
<u>Smart City Selling? Business Models and Corporate Approaches on the Smart City Concept</u>	211
<i>Monika Kustra, Jörg Rainer Noennig, Dominika P. Brodowicz</i>	
<u>Open innovation e tutela giuridica dell'ambiente. Il caso dell'Open Source Seed Initiative</u>	231
<i>Roberto Franco Greco</i>	

SECTION II

Gender, Bodies and Health in Sociotechnical Environments

<u>'The Hard Hat Problem': Women Traveling the World of Computing</u>	249
<i>Mariacristina Sciannamblo</i>	
<u>La (in)differenza di genere nella sociomaterialità della scuola steineriana: un'esperienza di ricerca</u>	263
<i>Camilla Barbanti, Alessandro Ferrante</i>	

<u>La sicurezza come pratica materiale di coordinamento. Il caso dell'introduzione di un sistema per la gestione della terapia oncologica</u>	277
<i>Silvia Fornasini, Enrico Maria Piras, Francesco Miele</i>	
<u>Assembling Mindfulness: Technologies of the Self, Neurons and Neoliberal Subjectivities</u>	293
<i>António Carvalho</i>	
<u>Where Are the Girls in STEM?</u>	309
<i>Asrun Matthiasdottir, Jona Palsdottir</i>	
<u>Le ricercatrici in fisica: primi risultati di un progetto di ricerca</u>	323
<i>Sveva Avveduto, Maria Carolina Brandi, Maria Girolama Caruso, Loredana Cerbara, Ilaria Di Tullio, Daniela Luzi, Lucio Pisacane</i>	
<u>Developing an Organic Strategy of Change to Challenge Gendered Stereotypes around the Technological (In)Ability of Women in Architecture</u>	339
<i>Maria Silvia D'Avolio</i>	
<u>Technology and Cultures of (In)Equality: Reflections from Collaborative App Development</u>	355
<i>Athena Maria Enderstein</i>	
<u>Precision Medicine between Bodies and Environment: A Comparative Analysis</u>	369
<i>Ilaria Galasso, Giuseppe Testa</i>	
<u>Immagini laparoscopiche. Esplorazione e parcellizzazione del corpo della donna</u>	383
<i>Miriam Ronca</i>	

SECTION III

Enacting Objects, Infrastructures, and Innovation

<u>Enrolling and Translating: Experiences of Using ANT in an Educational Research Setting</u>	405
<i>Victoria M. Gorton</i>	
<u>Semiotic Machines: Portrait of an Actor–Network as a Pushdown Automaton</u>	419
<i>Francesco Galofaro</i>	
<u>Engaging with the Concept of the ‘Script’ in Industrial Innovation Studies – or how Retro–Ant is Perfect but not ‘Enough’</u>	435
<i>Judith Igelsböck</i>	
<u>Intermateriality and Enunciation: Remarks on The Making of Law</u>	447
<i>Giuditta Bassano</i>	
<u>Infrastructuring is the New Black: Challenges and Opportunities of a Fascinating Intellectual Tool</u>	459
<i>Teresa Macchia</i>	
<u>Changing Complex Sociotechnical Infrastructures: The Case of ATM</u>	473
<i>Roberta Cuel, Giusi Orabona, Diego Ponte</i>	
<u>Il lavoro nella e–Society: polarizzazione della struttura professionale e scomparsa delle professioni esprimibili in termini algoritmici</u>	485
<i>Federico Fiorelli</i>	
<u>Personal Health Data in Frequent Users Life: From Institutional Design to Self–tracking</u>	499
<i>Alberto Zanutto</i>	
<u>Accessible Learning Environments: When Care Meets Sociotechnological Innovations for Pupils with Disabilities</u>	509
<i>Cristina Popescu</i>	

<u>Al Dente Textiles. Notes on Edible Textiles as Economic and Ecological Intermediality</u>	523
<i>Tincuta Heinzl, Svenja Keune, Sarah Walker, Juste Peculyte</i>	

SECTION IV

Designing Environments

<u>Emotions behind a Sphere. Experimentations for an Interactive Object Communicating Brand Values and Encouraging Behavioural Changes (or Reactions)</u>	545
<i>Francesco E. Guida, Camilla Ferrari, Serena Liistro, Mauro Vitali, Ernesto Voltaggio</i>	
<u>Interrelations Between Human Agency and Object Agency within Co-Making Environments</u>	561
<i>Ricardo Saint-Clair</i>	
<u>Designing Digital Encounters and their Agency on Users. A Case Study</u>	577
<i>Mauro Ceconello, Davide Spallazzo</i>	
<u>Artist as Science Communicator</u>	591
<i>Michelle Kasprzak</i>	
<u>The Flow and Use of Knowledge in Networks of Electric Mobility: A Theoretical Development</u>	607
<i>Nuno Boavida</i>	
<u>Tangible Interaction and Cultural Heritage. An Analysis of the Agency of Smart Objects and Gesture-based Systems</u>	617
<i>Daniele Duranti, Davide Spallazzo, Raffaella Trocchianesi</i>	
<u>Highlighting Issues in Current Conceptions of User Experience Design through Bringing together Ideas from HCI and Social Practice Theory</u>	631
<i>Ruth Neubauer, Erik Bohemia, Kerry Harman</i>	

<u>LBMGs and Boundary Objects. Negotiation of Meaning between Real and Unreal</u>	645
<i>Davide Spallazzo, Ilaria Mariani</i>	
<u>When Objects Tell Stories. Children Designing Future Smart Objects</u>	661
<i>Seçil Uğur Yavuz, Roberta Bonetti, Nitzan Cohen</i>	
<u>Interaction Matters. A Material Agency's Perspective on Materials Experience</u>	675
<i>Stefano Parisi, Valentina Rognoli</i>	
<u>What Does Light Do? Reflecting on the Active Social Effects of Lighting Design and Technology</u>	693
<i>Daria Casciani, Fulvio Musante</i>	
<u>Actualising Agency through Smart Products: Smart Materials and Metaphors in Support of the Ageing Population</u>	711
<i>Massimo Micocci, Gabriella Spinelli, Marco Ajovalasit</i>	
<u>Smart Digital Solutions and Desirable Human–Machine Interactions: A Contribution in Terms of Design Methodology</u>	729
<i>Margherita Pillan</i>	
<u>Acts of Use from Gestell to Gelassenheit: Calculative Thinking and Exploratory Doing</u>	743
<i>Giovanni Marmont</i>	
<u>The Concept of Displacement in Prototypes for Design Research: A Proposal of a Framework for Design Research that Uses Prototypes to Investigate Possible Future Scenarios</u>	755
<i>Juan Alfonso De La Rosa</i>	

Assembling Mindfulness: Technologies of the Self, Neurons and Neoliberal Subjectivities

António CARVALHO^{*a}

^a Universidade de Coimbra

Over the past three decades, psychologists, neuroscientists, phenomenologists and educators have displayed a growing interest in mindfulness, a contemplative practice which aims at enhancing the experience of the present moment.

Mindfulness has been implemented in the prevention of stress and heart diseases and in the management of pain. Encounters between scientists and practitioners of mindfulness have filled the public imagination of mindfulness with images of brain scans, visual testimonies of the effectiveness of this practice.

Despite the technical apparatus involved in mindfulness research and thousands of articles written on the topic, early researchers, such as Francisco Varela, recognized that the methodological intricacies of studying contemplative technologies, usually practiced in silence, required the need to intertwine first and third person approaches to the study of consciousness. The passionate and often personal relationship with mindfulness tends to complicate the boundaries between research and self-care, pointing towards new ontological politics which are embodied, somaesthetic and often escape academic orthodoxies.

This paper analyses the assemblage of mindfulness, showing how it entangles topics such as silence, the brain and biopolitics. Through the support of STS literature, the article explores the relationship between the anatomo-politics of mindfulness and contemporary formations of subjectivity.

Keywords: *Mindfulness; technologies of the self; neoliberal subjectivities*

^{*} Corresponding author: **António Carvalho** | e-mail: antoniommanuelcarvalho@gmail.com

Introduction

The aim of this paper is to offer a critique of the dissemination of mindfulness practice and research over the past three decades. I argue that mindfulness is a particularly interesting example to understand contemporary ramifications of neoliberalism, neurosciences and practices of the self. The adopted approach includes Foucauldian and STS literature on subjectivity, ontology and technology, recruited to delve into the emergence of a new technology the self which is becoming extremely popular in Europe and North America.

Mindfulness is a process of non-judgemental awareness to moment-to-moment experience, including sensations, emotions, thoughts and movements (Kabat-Zinn, 1991). Inspired by practices of Buddhist meditation, Mindfulness-Based-Stress-Reduction-Therapy (MBSR) was developed by Jon Kabat-Zinn at the University of Massachusetts in the late 1970s. It aimed at increasing the health and wellbeing of those who suffered from headaches, high blood pressure, back pain, heart disease, cancer and AIDS (Kabat-Zinn, 1991). In the 1990s, MBSR was coupled with cognitive-behavioural-therapy (CBT), generating another popular intervention – Mindfulness-Based-Cognitive-Therapy (MBCT). Unlike CBT, MBCT does not aim at changing thoughts, ‘the emphasis is on changing awareness of and relationship to thoughts’ (Teasdale et al., 2000, p. 616).

Mindfulness is helpful in the treatment of depression, substance abuse, anxiety and pain (Bowen et al., 2006; Grossman et al., 2004), increasing mood regulation, wellbeing, self-control, objectivity, affect tolerance, flexibility, equanimity, concentration, cognition, mental clarity, emotional intelligence, acceptance and compassion (Davis and Hayes, 2011; Heeren and Philippot, 2011; Shapiro, Walsh and Britton, 2003; Zeidan et al., 2010).

Mindfulness triggers significant changes in the human brain (Davidson et al., 2003; Hölzel et al., 2011; Kilpatrick et al., 2011) which have clinical implications, reducing automatic affective processing, altering one’s relationship to pain and leading to the cultivation of compassion (Farb, Anderson and Segal, 2012, pp. 6–7).

Mindfulness is considered a priority for implementation by the National Institute for Clinical Excellence (NICE) in the UK (Crane and Kuyken, 2013), and many departments of psychology and neurosciences are actively researching mindfulness (including the Oxford Mindfulness Centre, the Exeter Moods Disorder Centre and the Bangor Centre for Mindfulness Research and Practice). Although the implementation of mindfulness–

based—interventions in Britain is still at an early stage, there is a growing interest in these therapies.

This paper is supported by three strands of scholarly literature. STS (Science and Technology Studies) scholarly work has recently displayed a growing interest in ontology (Latour, 2013; Mol, 1999; Pickering, 2010), suggesting that scientific practice is eminently performative. This has stressed the importance of relationality, couplings between heterogeneous entities (Barad, 2003; Haraway, 2003; Latour, 2005) which do not pre-exist these associations, meaning that mediations (Verbeek, 2011) are political. This extends to the self (Brenninkmeijer, 2010; Carvalho, 2014; Gomart and Hennion, 1999; Rose, 2007), as subjectivities – thoughts, emotions and desires – are also mediated.

Mindfulness-based-therapeutic-interventions enact new modes of existence (Latour, 2013) fostered by couplings between practices of subjectivity, neuroimaging techniques that aim at revealing the ‘truth’ of inner states, psychological and medical discourses which frame human existence within specific categories (Davidson, 1987) and political devices of governing the population.

The emergence of medical and scientific devices makes up people that are framed and think of themselves in specific ways (Hacking, 2002; Rose, 1998). This involves forms of expertise, inscriptions, performances, translations, negotiations and various forms of stabilization (Callon, 1986; Fleck, 1979; Latour, 1987; Pickering, 1995). Mindfulness therapists and practitioners also undergo a number of transformations, being submitted to assemblages – retreats, workshops, teacher training courses – comprising a number of discourses, practices and devices of self-assessment. Similarly, inner states are understood and measured according to a number of discourses, practices and technologies (EEGs, fMRIs) and mindfulness itself relies on a reconfiguration of human performance.

The second major branch of literature which is relevant here concerns Foucault’s research on technologies of the self and governmentality. Foucault’s later work focused on practices of subjectivity which are mobilized to maximize physical abilities, to embody specific ethical frameworks and to attain particular states (Foucault, 1988). Technologies of the self allow us to unveil the articulations of the micro-politics of subjectivity and broader political frameworks. As Foucault wrote, ‘there is no first or final point of resistance to political power other than in the relationship one has to oneself.’ (Foucault, 2006, p. 252).

Mindfulness performs a new hermeneutic of the subject, allowing practitioners to interpret their experience in novel ways. Since technologies of the self are political, this paper recognizes the connections between the micro–politics of mindfulness–based–therapeutic–interventions – entailing performative, experiential and hermeneutical changes – and the macro–politics of contemporary political regimes. Foucault argued that modernity has led to the emergence of a particular type of power coined as governmentality (Foucault, 1978), focused on the management of the population itself, understood as a resource that could be controlled, normalized and enhanced through biopolitics and discipline (Foucault, 1987).

Governmentality shapes neo–liberal forms of subjectivity (Rose, 1998), and notions such as happiness, well–being and self–assessment (Binkley, 2011; McKay, 2013) turn contemporary selfhood into a manageable, quantifiable and improvable endeavour (Brenninkmeijer, 2010; Giddens, 1991; Lupton, 2013). It has been argued that brain plasticity goes hand in hand with neo–liberalism (Pitts–Taylor, 2010), for it puts selves in charge of enhancing their neurochemical selfhood (Rose, 2007). Mindfulness is a good illustration of the neoliberal focus on self–improvement – it consists of a set of technologies of the self and is supported by research relying on the assumption that the brain is flexible (Davidson and Lutz, 2008), justifying the redesign of human behaviour.

This leads to the third branch of scholarly literature, on the commodification of meditation. It has been suggested that current practices of mindfulness have lost their ethical meaning (McMahan, 2008), becoming therapeutic instruments which serve the needs of a population increasingly dissatisfied with the social and political world they inhabit (Zizek, 2005). It has been noted that the proliferation of non–western practices of subjectivity has led to the psychologization, medicalization and commodification of religion (Brown and Leledaki, 2010; Carrette, 2007; Carrette and King, 2005; Lasch, 1979) – instead of being central dimensions to a particular spiritual/religious path, meditative practices are used for self–enhancement.

Scholars concerned with the North/South inequalities have stressed that the appropriation of practices, commodities and substances by northern economies has led to instances of commodification and biopiracy (Scheper–Hughes, 2004; Shiva, 1997), as native/southern populations are alienated from their local knowledges, goods and practices. Mindfulness–based–interventions emerged after Buddhist techniques of meditation were

medicalized, which raises some issues dealing with the commodification of spiritual practices.

Mindfulness is usually portrayed as leading to the stabilization of selfhood, allowing practitioners to attend to moment-to-moment experience in a non-judgemental way. However, meditation often triggers unwanted and difficult episodes. Although there is some research on its negative impacts (Koster and Oosterhoff, 2004; Otis, 1984; Walsh and Roche, 1979), most literature on mindfulness focuses on the positive effects, which means that mindfulness is a 'normalized' and 'commodified' form of meditation.

Mindfulness and Neoliberal Selves

Mindfulness requires a constant attention to our psychosomatic assemblage, inviting practitioners, medical patients who attend MBSR courses and members of the general public to constantly assess their mental and emotional states. Thoughts, emotions, sensations, conversations and relationships can be submitted to a mindful 'gaze', which judges one's contemplative status and adjusts individual responses to daily phenomena. By reducing stress, maximizing happiness and triggering platitudes of relaxation, mindfulness works through the internalization and permanent medicalization of one's existence. As Kristin Barker argues

'mindfulness represents a significant expansion in the definition of disease beyond that advanced by mainstream medicine (...) its etiological model intensifies the need for therapeutic surveillance and intervention (...) it permanently locates individuals within a disease therapy cycle.' (Barker, 2014, p.168).

According to Barker, mindfulness is a form of do-it-yourself medicalization of every moment. Instead of rescuing practitioners from the tentacles of biomedicine, it reproduces, multiplies, expands the domain of illness by framing one's response to everyday life events through mindful lenses. This mindful gaze depends on new psychological, pastoral, spiritual and medical authorities that present mindfulness as a magic bullet to deal with stress, pain, anxiety, depression and a variety of manifestations that can be reduced to their psychosomatic correlates, therefore potentially resolved by the apparatus of mindfulness.

The mindful way of framing subjectivities is deeply entwined with buzzwords such as well-being, happiness and quality of life (Praisman, 2008), the tenets of modern Buddhism (McMahan, 2008). Mindfulness based stress reduction (Kabat-Zinn, 1991) is flourishing, being used by the British National Health System (Crane and Kuyken, 2013), leading Dawson and Turnbull (2006) to suggest that mindfulness might have become the new opiate of the masses. Mindfulness seems to go quite well with the docilization strategies of contemporary advanced liberal societies and their biopolitical dispositifs, linked to technologies of government that require 'an increasing emphasis on the responsibility of individuals to manage their own affairs, to secure their own security with a prudential eye on the future' (Rose, 2007, p. 4). Technologies of mindfulness would help neoliberal subjects getting on with their stressful lives, helping them adjust with a higher well-being, rendering them more 'stable' and, obviously, docile, by setting up protective bubbles. According to Zizek, meditation is the perfect ideological supplement of capitalism:

'The 'Western Buddhist' meditative stance is arguably the most efficient way for us to fully participate in the capitalist economy while retaining the appearance of sanity. If Max Weber were alive today, he would definitely write a second, supplementary volume to his Protestant Ethic, titled The Taoist Ethic and the Spirit of Global Capitalism.' (Zizek, 2005)

Zizek's critique of meditation resonates with William Davies' stance on mindfulness, progressively appropriated by global capitalism, which envisions happiness as a constitutive dimension of contemporary social formations, attempting to reduce popular contestation through the multiplication of forms of enhancing and measuring one's wellbeing. As put by Davies:

'Happiness, in its various guises, is no longer some pleasant add-on to the more important business of making money, or some new age concern for those with enough time to sit around baking their own bread. As a measurable, visible, improvable entity, it has now penetrated the citadel of global economic management. (...) the future of successful capitalism depends on our ability to combat stress, misery and illness, and put relaxation, happiness and wellness in their place. Techniques, measures and technologies are now available to achieve this, and they are permeating the workplace, the high street, the home and the human body.' (Davies, 2015, p. 8)

When Matthieu Riccard, a Buddhist monk, was considered the ‘happiest person in the world’ (Independent, 2007), the public imagination of mindfulness hit a turning point, allowing it to be fully appropriated by neoliberalism. Happiness, nowadays, is not only portrayed as the optimal realization of the human potential but is a measurable, assessed and virtually improvable entity. The anatomo–politics of mindfulness was eventually enframed by a new type of discourse which presents the brain as the site par excellence of the human soul, and by entangling contemplative practices with a number of neurological changes – which can be assessed through various forms of medical imaging – the contemporary quantitative self is emulated as the subjective manifestation of neoliberalism, a social system which presents the world as an assemblage of neural entrepreneurs permanently evaluating and improving their mental states. If phrenology was the attempt, by scientific racism, to measure, quantify and compare behavioural changes between individuals through the analysis of the shape of the skull, mindfulness, supported by a multitude of neurological devices, attempts to maximize one’s contemplative and eudemonic status through forms of permanent self–control, thus promoting a new moral economy of the brain.

Mindfulness and methodology: from silence to a new moral economy of the brain

Historically, meditation studies have drawn upon a series of methods to address a multiplicity of research questions. In psychology, different methodologies were used, including tests (such as the Rorschach test, see Brown and Engler, 1986), the personal experience of the author (Walsh, 1979), the analysis of central texts of Buddhist meditation, such as the Visuddhimagga, providing ‘maps’ for inner space (Goleman, 1996) or even quantitative methods. Sociological and anthropological studies have resorted to comprehensive ethnographies (Cook, 2010; Jordt, 2007; Pagis, 2008; Preston, 1988), semi–structured interviews with meditators (Pagis, 2008; Selim, 2011), life–stories of practitioners (Leledaki, 2007) and the personal experience of the researcher (Preston, 1988). More recently, neuroscientific and neurophenomenological studies have measured the brainwaves of experienced meditators through fMRI’s and other technological instruments, justifying the assumption that meditation has

real, measurable effects on the brains (and minds) of practitioners (see, for instance, Lutz et al., 2004).

These different approaches are ways of tackling phenomena taking place at the realm of 'inner experience', which can raise a set of methodological issues: how to translate the inner world? Can we use words to talk about those experiences that belong to the realm of the ineffable? Can we trust the accounts of those who go through these states? Are academic approaches to meditation based on personal experiences 'objective'? As Wittgenstein states, 'What we cannot speak about we must pass over in silence.' (Wittgenstein, 1961, p. 89); if we assume that meditation is about the ineffable, the unreachable and untranslatable, then meditation research would become an impossible endeavour. However, instead of becoming a *verboten* field of study, it requires the deployment of innovative methodologies that recognize the particularities of the topic. Varela and Shear (1999) argue that links have to be created between first and third person approaches to the study of consciousness. This involves the deployment of a set of methodologies in order to 'move towards an integrated or global perspective on mind where neither experience nor external mechanisms have the final word. The global perspective requires the explicit establishment of mutual constraints, a reciprocal influence and determination' (Varela and Shear, 1999, p. 2). A good example of intertwining first and third person approaches is, for instance, crossing verbal reports of meditative experiences with their physiological correlates, measured in laboratories (Shear and Jevning, 1999).

The laboratory progressively turned mindfulness practice into a manifestation of contemporary forms of neoliberalism, presenting this technology of the self as responsible for significant changes in the human brain. If the brain, in contemporary societies, is often presented as a faithful correlate of the 'self' (Rose and Abi-Rached, 2013), mindfulness research fosters a moral economy of the human brain. Since this practice, through permanent attention towards one's emotions and sensations, is promoted as a device to enhance well-being, concentration and self-control, the brain, as the locus of mindfulness-induced changes, becomes the moral ground for these modes of experience.

What exactly is this new moral economy of the brain? According to Ricard, Lutz and Davidson, the brain scans of advanced meditators reveal a number of differences when compared to those of non-meditators. For instance, the practice of mindfulness leads to 'diminished activity in anxiety-related areas, such as the insular cortex and the amygdala' (Ricard, Lutz and

Davidson, 2014, p. 41) and loving-kindness meditation (which consists in developing feelings of love, empathy and benevolence towards others) increase the activity of 'brain regions that fire up when putting oneself in the place of another—the temporoparietal junction, for instance' (ibidem, p. 41).

Through these findings, politicians, educators, psychologists and managers can have solid scientific evidence that justifies the implementation of mindfulness in a variety of institutions and settings, including the military (Stanley and Jha, 2009). Turning the brain into a multitude of areas which are correlated with some behavioural functions and traits allows the moment-to-moment visualization of the transformation of the human mind through mindfulness. The flexibility of one's psychosomatic assemblage is rendered transparent through new technologies of inner and outer vigilance, including technologies of the self such as mindfulness (and even mindfulness apps reminding practitioners to go back to their practice, see Mani et al., 2015) – and medical imaging technologies.

A novel network of technologies turned the old, colonial, quantified and racial skull of phrenology – a stable, unchangeable and measurable entity recruited to quantify racial differences – into the contemporary neoliberal brain, flexible and potentially submitted to a vast array of devices to maximize the contemplative and eudemonic status of the citizen in the most diverse circumstances. The neoliberal discourse of wellbeing and happiness created forms of neural entrepreneurship which couple the quantified self with visually appealing images of activated regions of the human brain, 'proving' that specific technologies of self-control have the potential to adjust one's brain to the moral economies propagated by psychologists and neuroscientists, internalizing the gaze of medical imaging as a mechanism of permanent self-assessment.

Conclusion: meditative islands of stability

According to Pickering (2014) modern science attempts to enact performative islands of stability, creating machines that capture nonhuman agency in an ideally stable, continuous and efficient manner. However, socio-technical disasters – such as the Fukushima crisis in 2011 – prove that the hubris of modernity, an expression of what Heidegger coined as

enframing (Heidegger, 1977), is not able to fully contain machinic and natural forces.

Similarly, mindfulness is an attempt to blackbox non-neoliberal forms of meditation, focused on exploration, self-discovery, transcendence and even madness. In fact, in the Mahasi Sayadaw tradition of Vipassana there are some stages of insight, called Dukkha Nanas, whose experience can generate fear and terror (Koster and Oosterhoff, 2004). Research on the negative effects of meditation is still an underrepresented field, considering the numerous studies that promote the positive outcomes of mindfulness.

The domestication of meditation and its unpredictable outcomes into medicalized devices, such as MBSR and MBCT, is an attempt to limit mindfulness to the shackles of neoliberalism, framing contemplative practices within psy categories such as happiness, well-being and self-control. Meditation, instead of potentially fostering new aesthetics of existence (Foucault, 1984), novel ways of being in the world that couple theory and the body, is exclusively aimed at maximizing one's immunological status (Sloterdijk, 2013), supported by new routines, smartphone apps and vindicated by technologies of medical imaging.

The contemporary assemblage of mindfulness is, therefore, an excellent case study not only to investigate the commodification of spiritual practices but also to assess the degree and scope of medicalization currently imposed and promoted by neoliberal discourses. A vast array of proposals, including mindfulness in schools, at work or the dissemination of state-sponsored MBSR and MBCT applications in Europe, indicate that governments, educators and corporations recognize the disciplinary and transformative potential of mindfulness. The early instability and danger of meditation as transgression was progressively tamed and is now relegated to the fringes of religious discourses, obscured by the imperial march of mindfulness as a technology of the neoliberal self.

References

- Barad, K. (2003) Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. *Signs: Journal of Women in Culture and Society*, 28 (3), 801–31.
- Barker, K. (2014) Mindfulness Meditation: Do-It-Yourself Medicalization of Every Moment. *Social Science & Medicine*, 106 (1), 168–176.
- Brenninkmeijer, J. (2010) Taking Care of One's Brain: How Manipulating the Brain Changes People's Self. *History of the Human Sciences*, 23 (1), 1–20.

- Binkley, S. (2011) Happiness, Positive Psychology and the Program of Neoliberal Governmentality. *Subjectivity*, 4 (4), 371–394.
- Bowen, S., Witkiewitz, K., Dillworth, T.M., Chawla, N., Simpson, T.N., Ostafin, B.D., Larimer, M.E., Blume, A.W., Parks, G.A. and Marlatt, G.A. (2006) Mindfulness Meditation and Substance Use in an Incarcerated Population. *Psychology of Addicted Behaviour*, 20 (3), 343–347.
- Brown, D. and Engler, J. (1986) The Stages of Mindfulness Meditation: A Validation Study – Part I and II. In Wilber, K., Engler, J. and Brown, D. (eds.), *Transformations of Consciousness*. Boston and London: Shambhala.
- Brown, D. and Leledaki, A. (2010) Eastern Movement Forms as Body–Self Transforming Cultural Practices in the West: Towards a Sociological Perspective. *Cultural Sociology*, 4 (1), 123–154.
- Callon, M. (1986) Some Elements of A Sociology Of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay. In Law, J. (ed), *Power, Action and Belief: A New Sociology of Knowledge?* London and New York: Routledge.
- Carrette, J. (2007) *Religion and Critical Psychology*. London and New York: Routledge.
- Carrette, J. and King, R. (2005) *Selling Spirituality: The Silent Take Over of Religion*. London and New York: Routledge.
- Carvalho, A. (2014) Subjectivity, Ecology and Meditation: Performing Interconnectedness. *Subjectivity*, 7 (2), 131–150.
- Crane, R. and Kuyken, W. (2013) The Implementation of Mindfulness–Based Cognitive Therapy in the UK Health Service. *Mindfulness*, 4 (3), 246–254.
- Cook, J. (2010) *Meditation in Modern Buddhism*. New York: Cambridge University Press.
- Davies, W. (2015) *The Happiness Industry: How the Government & Big Business Sold Us Wellbeing*. London: Verso.
- Davidson, A. (1987) Sex and the Emergence of Sexuality. *Critical Inquiry*, 14 (1), 16–48.
- Davidson, R., Kabat–Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S.F., Urbanowski, F., Harrington, A., Bonus, K. and Sheridan, J.F. (2003) Alterations in Brain and Immune Function Produced by Mindfulness Meditation. *Psychosomatic Medicine*, 65 (4), 564–570.
- Davidson, R. and Lutz, A. (2008) Buddha's Brain: Neuroplasticity and Meditation. *IEEE Signal Process Mag*, 25 (1), 176–174.

- Davis, D. and Hayes, J. (2011) What Are the Benefits of Mindfulness? A Practice Review of Psychotherapy-Related Research. *Psychotherapy*, 48 (2), 198–208.
- Dawson, G. and Turnbull, L. (2006) Is Mindfulness the New Opiate Of the Masses? Critical Reflections from a Buddhist Perspective. *Psychotherapy in Australia*, 12 (4), 60–64.
- Farb, N., Anderson, A. and Segal, Z. (2012) The Mindful Brain and Emotion Regulation in Mood Disorders. *Canadian Journal of Psychiatry*, 57 (2), 70–77.
- Fleck, L. (1979) *Genesis and Development of a Scientific Fact*. Chicago: University of Chicago Press.
- Foucault, M. (1978) La gouvernementalité. In Foucault, M., *Dits et Écrits II*, 1976–1988. Paris: Gallimard.
- Foucault, M. (1984) On the Genealogy of Ethics: An Overview of Work in Progress. In Rabinow, P. (ed.), *The Foucault Reader*. New York: Pantheon Books.
- Foucault, M. (1987) *The History of Sexuality – Volume One, An Introduction*. New York: Random House.
- Foucault, M. (1988) Technologies of the Self. In Martin, L.H., Gutman, H. and Hutton, P.H. (eds.), *Technologies of the Self, a Seminar with Michel Foucault*. Amherst: The University of Massachusetts Press.
- Foucault, M. (2006), *The Hermeneutics of the Subject – Lectures at the Collège de France 1981–1982*. New York: Picador.
- Giddens, A. (1991) *Modernity and Self-Identity*. Cambridge: Polity Press.
- Goleman, D. (1996) *The Varieties of Meditative Experience*. London: Thorsons.
- Gomart, E. and Hennion, A. (1999) A Sociology of Attachment: Music Amateurs, Drugs Users. In Law, J. and Hassard J. (eds.), *Actor Network Theory and After*. Oxford: Blackwell.
- Grossman, P., Niemann, L., Schmidt, S. and Walach, H. (2004) Mindfulness-Based Stress Reduction and Health Benefits – A Meta-Analysis. *Journal of Psychosomatic Research*, 57 (1), 35–43.
- Hacking, I. (2002) *Historical Ontology*. Cambridge: Harvard University Press.
- Haraway, D. (2003) *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Chicago: Prickly Paradigm Press.
- Heeren, A. and Philippot, P. (2011) Changes in Ruminative Thinking Mediate the Clinical Benefits of Mindfulness: Preliminary Findings. *Mindfulness*, 2 (1), 8–13.

- Heidegger, M. (1977) *The Question Concerning Technology and Other Essays*. New York: Harper & Row.
- Hölzel, B., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S.M., Gard, T. and Lazar, S.W. (2011) Mindfulness Practice Leads to Increases in Regional Brain Gray Matter Density. *Psychiatry Research*, 191 (1), 36–43.
- Independent (2007) The happiest man in the world? *Independent*, 21 January. [Online] Available at: <http://www.independent.co.uk/news/uk/this-britain/the-happiest-man-in-the-world-433063.html> [Accessed: December 19th, 2016].
- Jordt, I. (2007) *Burma's Mass Lay Meditation Movement*. Athens: Ohio University Press.
- Kabat-Zinn, J. (1991) *Full Catastrophe Living*. New York: Delta Trade Paperbacks.
- Kilpatrick, L.A., Suyenobu, B.Y., Smith, S.R., Bueller, J.A., Goodman, T., Creswell, J.D., Tillisch, K., Mayer, E.A. and Naliboff, B.D. (2011) Impact of Mindfulness-Based Stress Reduction Training on Intrinsic Brain Connectivity. *Neuroimage*, 56 (1), 290–298.
- Koster, F. and Oosterhoff, M. (2004) *Liberating Insight: Introduction to Buddhist Psychology and Insight Meditation*. Chiang Mai: Silkworm Books.
- Kuijpers, H., Van Der Heijden, F., Tuinier, S. and Verhoeven, W. (2007), Meditation-induced psychosis. *Psychopathology*, 40 (6), 461–464.
- Lasch, C. (1979) *The Culture of Narcissism*. New York and London: W. W. Norton & Company.
- Latour, B. (1987) *Science in Action*. Cambridge: Harvard University Press.
- Latour, B. (2005) *Reassembling the Social. An Introduction to Actor-network Theory*. New York: Oxford University Press.
- Latour, B. (2013) *An Inquiry Into Modes of Existence*. Cambridge: Harvard University Press.
- Leledaki, A. (2007) *Inner and Outer Journeys: A Qualitative Life History of Modern Yoga and Meditation as Body-Self-Transforming Pedagogies*. PhD Thesis. University of Exeter.
- Lupton, D. (2013) Quantifying the Body: Monitoring and Measuring Health in the Age of mHealth Technologies. *Critical Public Health*, 23 (4), 393–403.
- Lutz, A., Greischar, L.L., Rawlings, N.B., Ricard, M. and Davidson, R.J. (2004) Long-term Meditators Self-induce High-amplitude Gamma Synchrony during Mental Practice. In *Proceedings of the National Academy of Science USA*, 101 (46), 16369–16373.

- Mani, M., Kavanagh, D.J., Hides, L. and Stoyanov, S.R. (2015), Review and Evaluation of Mindfulness–Based iPhone Apps. [Online] *JMIR Mhealth Uhealth*, 19 (3).
- McKay, F. (2013) Psychocapital and Shangri–Las: How Happiness Became both a Means and End to Governmentality. *Health, Culture and Society*, 5 (1), 36–50.
- McMahan, D. (2008) *The Making of Buddhist Modernism*. New York: Oxford University Press.
- Mol, A. (1999) Ontological Politics: A Word and Some Questions. In Law, J. and Hassard, J. (eds), *Actor Network Theory and After*. Oxford: Blackwell.
- Otis, L.S. (1984) Adverse Effects of Transcendental Meditation. In Shapiro, D.H. and Walsh, R.N. (eds.), *Meditation: Classic and Contemporary Perspectives*. Hawthorne: Aldine Publishing Company.
- Pagis, M. (2008) *Cultivating Selves: Vipassana Meditation and the Microsociology of Experience*. Unpublished PhD Thesis. Department of Sociology, University of Chicago.
- Pickering, A. (1995) *The Mangle of Practice: Time, Agency & Science*. Chicago and London: Chicago University Press.
- Pickering, A. (2010) *The Cybernetic Brain: Sketches of Another Future*. Chicago: University of Chicago Press.
- Pickering, A. (2014) Islands of Stability: Engaging Emergence from Cellular Automata to the Occupy Movement. *Zeitschrift für Medien– und Kulturforschung*, 1, 121–134.
- Pitts–Taylor, V. (2010) The Plastic Brain: Neoliberalism and the Neuronal Self. *Health*, 14 (6), 635–652.
- Praissman S. (2008) Mindfulness–Based Stress Reduction: A Literature Review and Clinician’s Guide. *Journal of the American Academy of Nurse Practitioners*, 20 (4), 212–216.
- Preston, D.L. (1988) *The Social Organization of Zen Practice*. Cambridge: Cambridge University Press.
- Ricard, M., Lutz, A. and Davidson, R. (2014) Mind of the Meditator. *Scientific American*, 311 (5), 38–45.
- Rose, N. (1998) *Inventing Our Selves*. Cambridge: Cambridge University Press.
- Rose, N. (2007) *The Politics of Life Itself: Biomedicine, Power and Subjectivity in the Twenty–First Century*. Princeton: Princeton University Press.
- Rose, N. and Abi–Rached, J. (2013) *Neuro. The New Brain Sciences and the Management of the Mind*. Princeton: Princeton University Press.

- Selim, N. (2011) *Doing Body, Doing Mind, Doing Self: Vipassana Meditation in Everyday Life*. Master's Dissertation in Medical Anthropology, University of Amsterdam.
- Shapiro, S., Walsh, R. and Britton, W. (2003) An Analysis of Recent Meditation Research and Suggestions for Future Directions. *Journal for Meditation and Meditation Research*, 3, 69–90.
- Shear, J. and Jevning, R. (1999) Pure Consciousness: Scientific Exploration of Meditation Techniques. In Varela, F. and Shear, J. (eds.), *The View From Within: First-person Approaches to the Study of Consciousness*. Bowling Green: Imprint Academic.
- Scheper–Hughes, N. (2004) Parts Unknown: Undercover Ethnography of the Organs–trafficking Underworld. *Ethnography*, 5 (29), 29–73.
- Shiva, V. (1997) *Biopiracy: The Plunder of Nature and Knowledge*. Brooklyn: South End Press.
- Sloterdijk, P. (2013) *You must change your life*. Cambridge: Polity Press.
- Stanley, E.A. and Jha, A.P. (2009) Mind Fitness: Improving Operational Effectiveness and Building Warrior Resilience. *Joint Force Quarterly*, 55 (4), 144–151.
- Teasdale, J.D., Segal, Z.V., Williams, J.M.G., Ridgeway, V.A., Soulsby, J.M. and Lau, M.A. (2000) Prevention of Relapse/Recurrence in Major Depression by Mindfulness–Based Cognitive Therapy. *Journal of Consulting and Clinical Psychology*, 68 (4), 615–623.
- Varela, F. and Shear, J. (1999) First Person Accounts: Why, What, and How. In Varela, F. and Shear, J. (eds.), *The View From Within: First-person Approaches to the Study of Consciousness*. Bowling Green: Imprint Academic.
- Verbeek, P.–P. (2011) *Moralizing Technology: Understanding and Designing the Morality of Things*. Chicago and London: The University of Chicago Press.
- Walsh, R. (1979) Meditation Research: An Introduction and Review. *Journal of Transpersonal Psychology*, 11 (2), 161–174.
- Walsh, R. and Roche, L. (1979) Precipitation of Acute Psychotic Episodes by Intensive Meditation in Individuals with a History of Schizophrenia. *American Journal of Psychiatry*, 136 (8), 1085–1086.
- Wittgenstein, L. (1961) *Tractatus Logico–Philosophicus*. London and New York: Routledge.

- Zeidan, F., Johnson, S.K., Diamond, B.J., David, Z. and Goolkasian, P. (2010) Mindfulness Meditation Improves Cognition: Evidence of Brief Mental Training. *Consciousness and Cognition*, 19 (2), 597–605.
- Zizek, S. (2005), Revenge of Global Finance. *In These times*, 21 May. [Online] Available at:
http://inthesetimes.com/article/2122/revenge_of_global_finance
[Accessed: December 19th, 2016]