THEATRE ABOUT SCIENCE. THEORY AND PRACTICE

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Theatre About Science. Theory and Practice

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INTRODUCTION

This volume is a direct result of the Theatre About Science Conference, held in November 2021 in Coimbra, Portugal. Most of the articles build upon presentations given at the conference, but some were written specifically for this publication.

Some of the objectives of the conference were to map theatre and science intersections around the world, to promote exchange and expand knowledge on this field, to identify new types of intersections and to integrate non-anglophone initiatives.

In fact, some of the main academic contributions and events to that date in this area of research still had a strong anglophone-world bias. Kirsten Shepherd-Barr's "Science on Stage: From Doctor Faustus to Copenhagen"[1], in 2006, stands out as the first tour de force trying to study and organise a set of what became known as science plays, followed by Eva-Sabine Zehelein's "Science: Dramatic: Science Plays in America and Great Britain 1990–2007"[2] in 2009. After that, the Interdisciplinary Science Reviews published a set of two special volumes, in 2013 and 2014, under the title "New Directions in Theatre and Science"[3] and guest edited by Shepherd-Barr and Carina Bartleet (following a groundbreaking special issue in 2002 in the same magazine[4]), that gathered a collection of articles reflecting the liveliness and diversity of this area, and pointed out some future trends for science-related performance. These publications, along with several meetings on the subject starting with the primordial "Theatres of Science" conference (Wales / UK, 2004), the "Communicating Science to the Public through the Performing Arts" conference (New York / USA, 2010) and the "Performing Science: Dialogues Across Cultures" conference (Lincoln / UK, 2014), stand as important landmarks in the study and reflection upon the field.

More recently, "The Cambridge Companion to Theatre and Science"[5] (2022), edited by Shepherd-Barr, compiled a series of articles that added some new perspectives in this field, and "Science & Theatre: Communicating Science and Technology with Performing Arts"[6] (2022), edited by Emma Weitkamp & Carla Almeida, configures an important step towards mapping the diversity of practices of cross-pollination of theatre with science.

1 Science on Stage: From Doctor Faustus to Copenhagen Science on Stage: From Doctor Faustus to Copenhagen, Kirsten Shepherd-Barr, Princeton U. Press, Princeton, NJ, 2006.

2 Science:Dramatic: Science Plays in America and Great Britain 1990–2007, Eva-Sabine Zehelein, Heidelberg: Winter, 2009.

3 Interdisciplinary Science Reviews, Volume 38, Issue 4, 2013 & Interdisciplinary Science Reviews, Volume 39, Issue 3, 2014.

4 Interdisciplinary Science Reviews, Volume 27, Issue 3, 2002.

5 The Cambridge Companion to Theatre and Science, Kirsten Shepherd-Barr (Ed.), Cambridge: Cambridge University Press, 2022.

6 Science & Theatre: Communicating Science and Technology with Performing Arts, Emma Weitkamp & Carla Almeida (Eds.), Emerald Publishing, 2022.

The forthcoming edition of the Theatre about Science Conference, which will take place in 2023, builds upon all the above to continue to enrich the knowledge and exchange in this fertile field. This volume reflects the great diversity and different perspectives related to the connections between theatre and the sciences, both regarding the performative practice and the academic thought upon that practice. It also gathers contributions from Literary Studies, Theatre and Performance Studies and Science Communication. It reveals a diverse group of practices, varied stages, different formats, different sized productions and diverse target audiences, that suggest a common quality or characteristic in these intersections that can be activated in varied contexts and with different levels of production.

Finally, the diversity of voices and experiences present in this volume also carries with it a strong geographical perspective, with reports of practices in different regions of the globe, sketching a wider panorama of theatre and sciences intersections.

One additional goal guiding the Theatre About Science Conference, which is reflected in this volume, is the promotion of dialogue between the artistic and the science communication worlds. The connections between these two fields have been quickly expanding in recent decades. Science communication is becoming more and more essential in academic and research environments and theatre has been one of the most engaging artistic languages used in this endeavour. The contents of this volume give us a glimpse on some fruitful interactions between artistic practice and science communication.

The volume is organised in two main sections, Reflections and Reports on Practice. The first section contains a group of manuscripts of a more reflective nature, that analyse several theatre plays and performances from an academic perspective and/or question the nature and discuss possibilities for theatre and science liaisons. The second part of the volume presents several engaged reports on practical cases of interactions between theatre and the sciences, which are very diverse in nature, form, theme and working processes, and display a rich ecosystem that defies the establishment of boundaries for what can be defined as theatre about science.

Along with the diversity they portray, the manuscripts in this volume also dialogue with each other. There are shared themes, like for instance Physics and metaphors in the texts of Canals and Hagenaars, discussions on the lecture-performance format in Delbecke and Brunello, the anthropogenic impact on the planet is present in the manuscripts of Albernaz, Hamilton and Simpson & Shepherd-Barr, or considerations on ethical perspectives in Health Sciences, in the works of Townsend and Zehelein.

Several texts describe different creative processes, with a variety of perspectives, like the one of a dramaturg (Tretter), the one of the writer in his individual endeavour (Marques), the collaborative

writing of several playwrights (Erice), a one-woman show (Hagenaar), the collaboration between artists and scientists (Albernaz, Rodrigues et al., Spiga, Bowman, Erice), writing plays with Artificial Intelligence (Rosa), or the interaction human-AI machine on stage (Mirowski). On the other hand, we also have some philosophical reflections on theatre and topology (Jerpe) and on the very meaning of theatre about science (Mendes).

Although we can trace science in theatre at least to the beginnings of modern science itself[7], the scholarship on this intersection started essentially in this century. It has been an academic subject for roughly two decades. This volume stands as an additional contribution to the knowledge on this field, displaying its diversity in terms of themes, geographies, presentation formats, target audiences, and creative contexts, processes and tools.

7 The Emergence of Modern Science and its Representation in Dramatic Text, PhD Thesis, University of Coimbra, 2017.

I. REFLECTIONS

THE LECTURE-PERFORMANCE, WHERE SCIENCE AND ART INTERTWINE

JASPER DELBECKE

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Introduction

How do we orient ourselves politically within the new climate regime? Why are we disoriented in this new regime? And how can we imagine and visualize it? These questions are the pillars of INSIDE, a lecture-performance created by Frédérique Aït-Touati, theatre director and historian of literature and modern science, and performed by Bruno Latour, the renowned sociologist of science and philosopher. Together they developed a lecture-performance resolving around Latour's academic scope of the last decade: climate change. In line with his recent work, Latour reflects in INSIDE on the relationship between us, human beings, and our environment. Latour observes a discretion between the ontology of the planet and how we represent and imagine the planet. When we say "planet", we imagine the globe from outer space: the stereotypical "blue planet". What such an aloof image of the planet neglects are the human and non-human actors, the processes and transitions that compose and constitute the ecology of our planet. As Latour addressed in the performance, our assumption of the globe as a stable object that we can observe and dissect from a distance has long been (and still often is) the assumption of science as well. In our attempts to study the globe from a distance, we have lost out of sight the place that we inhabit and where we live. INSIDE serves as a counteract to depict and imagine the planet differently. Not as a stable object but the depiction of a world wherein the processes and cycles of transformations all the actors of the planet are exposed to. When Latour enters the stage of the theatre space, he is solely assisted by a pulpit and dimmed lights. But when the lecture gradually enfolds, Latour immerses and sometimes vanishes in the imposing scenography.

The lecture-performance Move 37 (2019), stages the encounter between Thomas Hertog, cosmologist and former collaborator of Stephan Hawking, and Thomas Ryckewaert, biologist and theatre maker. Ryckewaert opens Move 37 with a disquisition on Go, a traditional Chinese board game and the oldest of its kind. Despite its simple appearance, the number of possible board positions in a Go game exceeds the number of atoms in the universe. To become a high-class Go-player, exclusively human skills such as intuition and creativity are presumed far more important than pure computing power. Go was long considered impossible to be broken by a computer. In 2016, Google's A.I.-department DeepMind developed AlphaGo, a artificial intelligence-controlled program trained in Go. On March 16th 2016, AlphaGo competed against Lee Sedol, the world champion of Go. What was ought implausible happened: AlphaGo's 37th move in Go is one no human being could have ever imagined. Sedol leaves his chair and returns pale as a ghost. The live commentators fall silent, and the image seems to freeze. In this moment of defeat and wonder, the radical weirdness of A.I. stares us in the face: highly intelligent, creative but also completely alien. Uttering these words, Ryckewaert leaves the stage and Thomas Hertog enters the stage. Assisted by a blackboard, crayons, and a small water vortex project on the back of the stage, Hertog enthusiastically starts to speak about black holes, Einstein's theory of relativity, quantum physics, and the infinity of the universe. On the boundary between human and alien, intimate and strange, reality and fiction both INSIDE and Move

37 explore phenomena that transcend the human imagination. And the lecture-performance seems to be an apt format to articulate these frictions.

Since the 1960s, the widespread practice of the lecture-performance knows a long tradition in the field of contemporary arts. Together with INSIDE and Move 37, we observe a growing interest in the lecture-performance by academics working in other disciplines than the arts. Parallel to the genealogy of the lecture-performance within the arts, such a resort from scientists emerges 'out of the necessity for an experimental concept' to communicates one's research (Rainer 2017:79). Next to many other practices, media and methodologies, the lecture-performance is one of these experimental concepts, with the theatre space as a place where this experimental way of sharing research stands out well. INSIDE or Move 37 are exemplary for a growing need and desire by academics to communicate research differently, but most of all, to try out new approaches of doing research, beyond the calibrated, gauged, and safe methodologies.

From arts to science: the genealogy of the lecture-performance

The lecture-performance already emanates for decades in the arts. The practice originates from the American and European avant-garde of the 1960s and coincided with an academicization and institutionalization of the arts. Artists were invited to teach at art schools or to talk about their work and artistic practice in an academic context. In this period, the lecture performance emerged as a vital aesthetic form, 'both as a result of and reaction against compulsory academicization' (Firunts 2016:19). From the 1980s and 1990's onwards, the institutional critique by artists of the political, ethical, and economic conditions of the art scene became significant topics addressed by lecture-performances. But to dismiss the lecture performance as a mere bashing of academic and art institutions would dishonor the practice of lecture-performance. As curator Jenny Dirksen noted, artists' recourse to 'the academic discourse to gain some control or right to speak about the exploitation of their artistic practice' contributed at the same time to the widening of that artistic practice. (Dirksen 2009:13). This brought the lecture-performance throughout the years to a format and practice that helped 'to imagine how knowledge may be produced and disseminated outside the academy: within alternative institutional frameworks, beyond authorized communicative forms and through embodied modes of performativity' (Firunts 2016:19). Where it once was a format to present and reflect on one's artistic practice, it addresses nowadays a wide variety of topics: from artistic, scientific, or subjective research topics to social, cultural, and political subjects.

The interest of artists in the lecture-performance and its relevance lies in the hybrid character of the practice: it combines a functional presentation with artistic performance, it draws on historical methods but reflects at the same time on the role of art in our world. In doing so, it challenges the

conventional notions of knowledge production, communication, and criticism. Due to its evolution, the lecture-performance as a medium for the presentation, dissemination and discursive treatment of topical questions and standpoints', is no longer a practice restricted to artists, but it is also practiced by art critics, art historians, and art theorists in an academic context (Dirksen 2009:13). And apart from the presence of a phlegmatic artist performing or the attentive audience listening during this social gathering, curator Rike Frank assigns the popularity of the lecture-performance to its affective dimension. As Frank explains, the lecture performance allows the introduction of 'other forms of personal affect that complicate and obscure the understanding of the subject as a 'resource' to be capitalised upon' (9). Blending a scientific with a personal vocabulary, one can turn more easily to 'an affective attachment to objects and ideas that implies more personal less institutionalised relations and directed against forms of fixation, standardisation and closure' (11). This affective dimension is, as performance theorist Maaike Bleeker observed, invariably combined with 'a self-reflexive attitude with respect to one's own doing and the conditions of production and reception' as prominent characteristic of many lecture-performances indicates a close (236). By blurring the boundaries between production and reception, the lecture-performance, Rike Frank summarizes, 'opens up the possibilities to experience knowledge as a reflexive formation that is as much aesthetic as social – in other words, as an open feedback system' (6).

As performance studies theorist Lucia Rainer notes, the concept of the lecture-performance brings into focus that knowledge is not a factum but in constant flux. Because knowledge oscillates between acts of determining and re-determining, Rainer argues, that the individual, spatiotemporal frame influences the ken activity of knowledge as an encounter that is interfused by the presence (10). Consequently, 'Knowledge does not testify to consistency but adheres to its individual processes of the singular' (16). One's research and the presentation of its outcomes are in the lecture-performance, not separate processes but permeate each other. As for performance theorist Sybille Peters elaborates on this interplay, knowledge presentation and knowledge production coincides, and their procedures are made transparent. In doing so, it exposes and realigns knowledge practices that derive from supposed certainty and assurance (170). And whereas artists try to create these interplays and frictions in classrooms and auditoria, Latour and Aït-Touati, as a scientist and historians, tried to do this in the black box of a theatre by transforming the theatre 'into an instrument for visualization and a heuristic tool' (Aït-Touati 2017:153).

Latour's resort to theatre and the format of the lecture-performance might be seen as a mere detail or a frivolous excursion but the opposite is true. From the very beginning of Latour's academic career, the notion of theatre asserted its appeal to the French philosopher of science. Not theatre in particular, but the power dramatization incited Latour. In one of his first books, The Pasteurization of France, Latour outlines how Louis Pasteur became indisputable as a pioneer in the level of microbiology and his study of anthrax. 'Pasteur's genius', Latour writes, 'was in what might be called the theater of proof.

Having captured the attention of others in the only place where he knew that he was the strongest, Pasteur invented such dramatized experiments that the spectators could see the phenomena he was describing in black and white' (85). Not the clarity of Pasteur's expositions and argumentations explained the persuasiveness of his ideas and research. And the contrary, it was 'the visual quality' and the dramatization of his experiments in this 'new theatre of truth' that lured the people (84). With INSIDE, Latour follows this methodological thread tightened by Pasteur. The content of INSIDE is an elaboration of Latour's most recent work: Facing Gaia: Eight Lectures on the New Climatic Regime and Down to Earth: Politics in the New Climatic Regime. Similar to Pasteur, Latour is accompanied on stage by drawings and visualizations of Alexandra Arènes, Axelle Grégoire, and Sonia Lévy, in an attempt to visualize and dramatize his research claims. Although his lecture-performance takes in the black box of theatre spaces, he does not consider it as a work of art or see himself as an artist. As Latour explains: 'constructing a play pushes me to sharpen philosophical concepts. It may be a weak definition of art, but the practical artistic work helps me to grasp ideas that are still half-obscure, hidden in the shadows' (Aït-Touati & Latour 2018:16).

From science to art: the lecture-performance in INSIDE and Move 37

Latour's taste for the dramatization of philosophical or scientific ideas re-establishes the alliance between art and science. In the 16th and 17th, this alliance was very strong, and the powers of fiction helped science to revolutionize the conception of the earth. As pioneers such as Johannes Kepler, Bernard Fontenelle, Christiaan Huygens, Robert Hooke or Margaret Cavendish proved centuries ago, the use of 'fiction is not opposed to knowledge but takes part in the constructions of different kinds of knowledge: it confirms, anticipates, or develops' (Aït-Touati 2011:36). With the work of scientists like Latour or Thomas Hertog and artists like Hannah Hurtzig, Thomas Saraceno, Kris Verdonck, Thomas Ryckewaert, and many others, we see modest attempts to close the gap between art and science the wig of modernity once drove. As is the case with Latour and INSIDE, where the new climate regime invites the arts and science to be explored in different ways. In that sense is INSIDE as lecture-performance an attempt to stage the problem of climate change in a different way than is done in our dominant visual culture, with its obsession with catastrophe, disasters, and dystopia.

INSIDE withdraws from the profoundly perverse delight in the extent of disaster that we observe in visual culture where audiences are confronted with environmental catastrophes. The Romantic notion of the Sublime that was cherished once has been replaced by what Latour termed as 'a dark neo-sublime, a sort of pornography of catastrophes' (Aït-Touati & Latour 2018:19). Instead of reproducing the spectacular pathos of a blockbuster catastrophe movies to the stage and perpetuate the anxiety associated with the dark neo-sublime, with INSIDE, Latour and Aït-Touati try to provoke alternative feelings and possible affective ways to relate to the new climate regime. Even though we

have to say that this provocation is rather unobtrusive. Parallel to Latour's research of the last decade, the key argument of INSIDE resolves to the idea that we cannot longer pretend that we are able to distance ourselves from the world and describe it. We are inherently entangled in this world.

On a theatrical and dramaturgical level, this entanglement is almost literally translated: Latour immerse towards the end of the lecture-performance into the scenography. 'Decor is not decor anymore', Aït-Touati and Latour argue, parallel to how we are confronted today with and by nature in the new climate regime (Aït-Touati & Latour 2018:17). The drawings and projections that we as spectator tend to perceive as mere backdrops and visual illustrations of Latour's argument now start to merge with the foreground of the stage and becomes active. It articulates the authors' search for a new relationship to scenography, by de-centering the human, moving him or her slightly off stage and helps us to 'get closer to the way life forms are in the world through imagining their stories, including the stories of their entanglements with us, human beings' (Aït-Touati & Latour 2018:18).

Whereas INSIDE as lecture-performance is predominated by its "lecture" part, the "performance" part of the lecture-performance predominates in Move 37. In the latter, the presence and impact of the theatrical framework is much more played out and felt, especially towards the end of Move 37. One could say that Move 37 exists out of two lecture-performances: the first by theatre maker Thomas Ryckewaert, discussing the GO-incident. The second is Thomas Hertog's groping exposition on cosmic phenomena. Hartog's eager way of talking about his field of expertise in combination with the theatrical apparatus constantly suggests for the spectator a kind of uncanniness. When Hertog talks about black holes, his commendation is accompanied by a water installation on stage, serving as a visual tool to support his arguments. A video camera captures the black water vortex from above, suggesting a black hole, and projects it on the back of the stage. As a spectator, you are not getting any wiser out of this experience, in contrast to what a 'lecture' and a scientist on stage would suggest. Hertog's partaking in Move 37 is not an attempt to lecture a non-academic audience on the mysteries of the universe. On the contrary, the theatrical and non-academic frame offers Hertog the possibility to show the lacuna of his field of expertise is dealing with: the inability of human imagination to imagine and depict these black holes. Despite the unimaginable amount of scientific work that has been done by experts from various fields dealing with our universe and existence, each the human brain is confronted with its restrictions on the level of imagination. This is what Move 37 outlines regardless of all the mathematical formulas scientists wield in their rigorous scientific methodology; there is still so much of the universe that is beyond human comprehension. Not the transfer of knowledge on the cosmos or GO, but the sharing of an experience of phenomena that go beyond our comprehension is the core of Move 37. Cultural theorist Mark Fisher wrote how 'in many ways, a black hole is more weird than a vampire. The bizarre ways in which it bends space and time are completely outside our common experience and yet a black hole belongs to the natural – material cosmos – a cosmos which must therefore be stranger than our ordinary experience can comprehend' (15).

Therefore, Fisher prefers 'eerie' instead 'weird' to describe this experience. Both the eerie and the weird share 'a fascination for the outside, for that which lies beyond standard perception, cognition and experience' (8). But whereas the weird relates to something that does not belong to our world (like a vampire), the eerie 'is constituted by a failure of absence or by a failure of presence' and provokes a sensation of something present were there should be nothing, or the absence of something that should be there (64). What Ryckerwaert and Hertog by Move 37 want to share isn't the knowledge of the power of artificial intelligence that directed AlphaGo to beat Lee Sedol or the knowledge of the universe, but this eerie sensation they experience every time they think, talk and wonder about them. What Hertog cannot communicate through his highly praised academic work – this eerie sensation for that which lies beyond our perception, cognition and experience – might be communicated through theatre and its parameters. And all though Ryckewaert, as an artists, and Hertog, as a scientist, might be seen on first sight as each other's opposites, they both share the desire to grasp, apprehend and imagine the world. The tools and methods they use to do this might be very different, in the end and each in their own way, they are also confronted again with the fallibility of those tools and methods.

The lecture-performance as a speculative practice

What INSIDE and Move 37 as lecture-performances share with the lecture-performances form the realm of arts is the significant position of experience and the affective dimension, as highlighted by Lucia Rainer. The experience of being affected by climate change's impact on humans and non-humans, as in INSIDE. The experience of wonder, marvel and nullity in relation to the mysteries of quantum physics, as in Move 37. Doing research on these topics is treating preliminary findings not as fixed meanings but as uncertainties that need to be examined before being determined and defined. Such engagement with such uncertainties is accompanied by disagreements, failure, wonder, doubt, and moments of epiphany or frustration. While researching, an array of possibilities is on the table. Considerations and choices are made. Some options are further explored, to test and to weigh some of the propositions. Observing how science and academia over the years became more competitive and focused on quantitative rather than qualitative output, it does not come as a surprise when observing how scientists and academics search for alternative and less competitive ways of doing and sharing research. So, one can apprehend scientist's interest in charting the experience of doing scientific research and sharing it with others in a way it includes this experiential and affective dimension of doing research, as in INSIDE and Move 37, as a reaction against some dominant tendencies challenging the academic and scientific realm.

On the one hand, affected and cankered by populist and neoliberal politics, the humanities – and science in general – are facing declining credibility and persuasiveness in times of fake news and post-

truth. Another consequence of this tendency is the constant demand to social and cultural researchers 'to foster, promote and articulate the relevance' of what they practice and produce (Savransky 2016:25). On the other hand, in the face of the ecological crisis, growing inequality, shifts and the democratic deficit, these disciplines do not seem fully equipped to have a significant impact these days. Where science once was able to formulate and offer solutions to solve our problems, today this seems not the case anymore. The contingency of our time demands for new methods, concept and paradigms in counteracting our dominant modes of response.

This impasse partially explains the (re)newed interest by philosophers of science for the pivotal role experience plays in science. The anti-realist stance of continental philosophy and its repetitive focus on texts, discourses and social practices of the last decades jostled reality and the experience of reality to the background. The more recent revival of the empiricist philosophies of thinkers such as William James, John Dewey and Alfred North Whitehead foregrounds their unconditional 'commitment to the priority of experiences of all natures and manners, as means of feeling, knowing, and thinking the world and the relationship that our practices sustain and with it, also the many relations and modes of togetherness by which things come to matter' (Savranksy 2016:181). In their radical empiricism, as sociologist Martin Savranksy notes, they subscribe to a form of empiricism that regarded experience itself as neither fixed nor fully contained in thought; as a dynamic plane on and through which, thinking is cultivated, articulated and transformed. When we observe reality, we cannot retreat from the flux of reality. One cannot see everything from nowhere and thinking from that outsider-position what reality is or should be. For James and Whitehead, as founding fathers of this radical empiricism, 'thinking is always thinking with and in the midst of experience' (2017:28). Because no thoughts or concepts are fully able to adequately capture the dynamic complexity of relationships when experiencing the world, errors or fallibility of thoughts pose no problem. On the contrary, the fallibility of our thinking is an insurmountable part of every process of thought and knowledge.

Drawing on this radical empiricist tradition, Savransky argues that if the humanities want to overcome of its current impasse, it must mobilise a way of thinking that always 'begins from the facts of experience and seeks to return to these facts transformed by the imaginative leap involved in the invention of concepts that seek to inhabit the possible' (2016:185). This type of intellectual exercise is what Savransky terms as 'speculative experimentation'. In the modern European linguistic variations, "speculation" is derived from a series of Latin verbs and nouns: speculatio ('observation', 'contemplation'), specere ('to look'), speculari ('to observe', 'to examine', 'to explore') and speculum ('a looking glass', 'a mirror'). The Sanskrit root of these nouns and verbs, spàs ('to spy', 'to see', 'to observe'), etymologically connects to sight and touch, to clarity and obfuscation and turns us towards not only to 'speculation as thought' but also to 'speculation as a pressing toward an apprehension of the unknown' (Uncertain Commons 2013:8). Born on the perplexing and poetic capacities of mirrors ('specula') and provocative modes of knowing and thinking ('speculum' was also the name for medieval encyclopaedia), speculation

brought together the visible and the invisible and served as a testing ground in order to push to known to the unknown (Savransky et al 2017:5). 'The speculator', as philosopher of science Isabelle Stengers summarizes, is he 'who observes, watches, cultivates the signs of a change in the situation, opening themselves to what, in this situation, might be of importance' (Debaise & Stengers 2017:18). Such a speculative mode of theorising, Savransky continues, involves a practice of thinking that is rooted in both perceptual and conceptual experience. From thereon, 'speculations must begin from the real possibilities emerging from actual facts and inventively construct abstract and practical tools capable of effecting a different mode of transitioning between present and future by providing an alternative path towards a novel empirical situation' (2016:201). The aim, Savransky concludes, is that of producing concepts, words, or tools that may contribute to the rearrangement of the relationships, the modes of togetherness of the facts that compose a situation so that the latter might be experienced differently, opening a path to the composition of a different future (2016:203). Speculation within social science, philosophy or the arts then becomes a strategy or method to go beyond that what is conventionalized. What these speculative approaches try to acquire is openness and susceptibility for what characterizes contingency: uncertainty, ambiguity and ambivalence. As illustrated by INSIDE and Move 37, the lecture-performance can be considered as a practice where this changing and ambiguous experience of doing science and research can be addressed and highlight how the gap between what is known and unknown, between what is available and unavailable cannot always be bridged.

The lecture-performance as an essayistic practice

Stengers' account of the scientist as speculator reverberates with the way curator Jenny Dirksen compared the lecture-performance to the process of essay writing. Dirksen draws her comparison from the way German writer Max Bense described the process of essay writing as followed: 'he who writes essayistically; composes something experimentally; turns his subject his way and that, questions, touches, inspects, and reflects upon it thoroughly; approaches it from different angles, and collects what he sees in his mind's eye, and formulates in words what his topic reveals under the conditions established by writing' (52). As Dirksen argues, the lecture-performance is related to the process and practice of essay writing in the way subjectivity and inductivity are combined in these (self-)reflexive and critical practices. Both are reflective modes and methods of presentation in which pragmatic and aesthetic criteria are treated with equal validity and complement each other to expand the possibilities inherent in any perspective it explores. The essay form as the lecture-performance function both as a platform for reflecting on the necessities, the stumbling blocks and the possibilities of doing and presenting research (10-11).

Dirksens' reference to the essay form reminds to its epistemological qualities. Because of its connotations with a experiencing, reflecting, and narrating self, one tends to forget the role the essay form played

in the way knowledge was produced. Michel de Montaigne's Essais were a reaction to the dogmatic scholasticism, descended from medieval times but still dominated thinking and writing in the 16th century. In reaction to the scholastic obsession with metaphysics, Montaigne turned his gaze to reality and let his writing flow out of his personal experience of the turbulent times he was living in. His associative, discursive, informal, meandering and slovenly way of writing did not only depart from his experiences but were also a way to shape and to think about his experience. Since Montaigne introduced the literary form, the essay has been and still is a form that not only thematizes contingency, but also tries to make that contingency, or at least the experience of the latter, part of the style of writing.

In the age of Enlightenment, innovative thinkers and scientists were prompted to speak from outside the authorized structures of the traditional methods of science. Rejecting the dogmatic views on nature and science, knowledge through individual experience was valued. Such empiricist methods demanded new forms of expression to examine the subject–object relationship it had discovered. As Lars O. Erickson (2004) observed, the (scientific) essay was particularly apt to host a more process-oriented way of reflecting on how one arrives at conclusions. Attempting to connect the universal with the concrete–particular, the essayistic science of the eighteenth century hovered between the rejection of scholasticism and the relativizing threat of empiricism. As such, the written essay offered a testing ground to develop new methods, systems and provisional knowledge. The latter is an important element in a time of epistemological movement and allowed space for doubts, uncertainty and contingency. So the essay operated as 'a tool for scientific discovery and as a means of expressing subjectivity as a process, for embodying the mind in its unpredictable motions and emotions' (Milnes 2019: 147).

Although eighteenth-century essays are often associated with solipsistic writing and mere belle-lettrism, it is noteworthy that a particular branch of essayist practitioners deployed the literary form to bridge the gaps between various scientific disciplines that were not fully developed at that time. Science as such did not yet have its own place, and its discourse had no fixed form; it made its appearance across a heterogeneous range of texts and domains. For innovators such as Denis Diderot, Robert Boyle, and Pierre Louis Maupertuis, the essay was one of those literary vehicles where fiction, experimentation, scientific hypotheses and knowledge could come together and where the freedom of imagination was preserved. As an irregular, adventurous and unfinished attempt, the essay made 'statements about what could and should be known, and how' (Siskin 2016: 33). As a form of expression for emerging disciplines and for ideas that went beyond the existing ones, the eighteenth-century essay was the repository for topics that belonged to no discipline (yet). Living in the margins, the essay could speak from an unorthodox position in order to express ideas that have no other enunciative structure. And even when these ideas found a structure in a newly developed discipline by the turn of the nineteenth century, the essay as a literary and scientific tool continues to move like an amphibian between environments and disciplines (Milnes 2019: 196).

By coining their work as 'scenic essay' Frédérique Aït-Touati and Bruno Latour inscribe INSIDE in this history and legacy of the essay form as an epistemic vehicle for the development of new forms of knowledge, acknowledging the important role of subjective experience in doing and presenting research (Zone Critiqie 2022). In his canonical book Postdramatic Theatre, Hans-Thies Lehmann introduced the notion of the scenic essay as one of the elements that shaped and characterized the panorama of postdramatic theatre. According to his definition, scenic essays were theatre plays offering 'a public reflection on particular themes' – by dragging theoretical or philosophical texts on stage (112). The means of theatre were used 'to "think aloud"' about the actor's subject, its representation, and the role of language' (113). In INSIDE, as in the subsequent lecture-performances Moving Earths (2019) and VIRAL (2022) of Aït-Touati's and Latour's Terrestrial Trilogy, means of theatre are used in to reflect on the need for a profound renewal of our representations of the terrestrial world, biotic and abiotic. Whereas INSIDE explores visual alternatives to the haunting and deceptive image of the "Globe"; Moving Earths tries to immerse the audience in the experience of a moving, reactive earth. In VIRAL, the closing part of the Terrestrial Trilogy, is an exploration of contagion as an essential process of our closed world, and the political consequences of this expanded definition of life.

Conclusion: reclaiming science

Stating that INSIDE or Move 37 herald a new trend within the field of performing arts and in science would be overrated. But what both examples do indicate is the necessity and urge to practice and foster scientific research in differently so it can respond to today's challenges. In that vein, the intentions of Aït-Touati & Latour and Ryckewaert & Hertog resonate with Isabelle Stengers analysis outlined in her book Another Science is Possible. Observing, and experiencing herself, the growing importance of benchmark evaluation and blind competition in all academic fields Stengers distinguishes 'fast science' from 'slow science'. 'Fast science', as Stengers notes, 'refers not so much to a question of speed but to the imperative not to slow down, not to waste time, or else…' (115). In today's knowledge economy we live, we are encouraged to produce and communicate new ideas at a high pace indented to, in turn, generate more new ideas. But what such a method of working implies is that it evades what slows down this process: frictions, rubbings, uncertainties, and hesitations.

As philosopher of science, Stengers reminds in her book that these elements of friction, hesitation and uncertainty are an inherent part of knowing and valuing those process, practices and experiences making up our common world. In her plea for what she denotes as 'slow science', scientists 'accept that what is messy is not defective but simply that which we have to learn to live in and think with' (120). The strong alliance between industry and fast science disembedded knowledge and ignored the messy complications of this world. But as the current ecological breakdown illustrates, we are now (re) discovering that we have messed up our world. Stengers plea for slow science is not a plea for a new

kind of science. On the contrary, Stengers call for slow science is one of 'reclaiming – recuperating, healing, becoming capable once again of linking with what we have been separated from' (81) and 'recovering or reinventing what that separation has destroyed' (121). 'If reclaiming scientific research means re-embedding the sciences in a messy world', Stengers concludes, 'it is not only a question of accepting this world as such, but of positively appreciating it, of learning how to foster and strengthen' (122). Inside and Move 37 are examples of a joint venture between scientists and artists to embed their practice again in this messy world.

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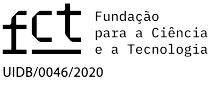

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