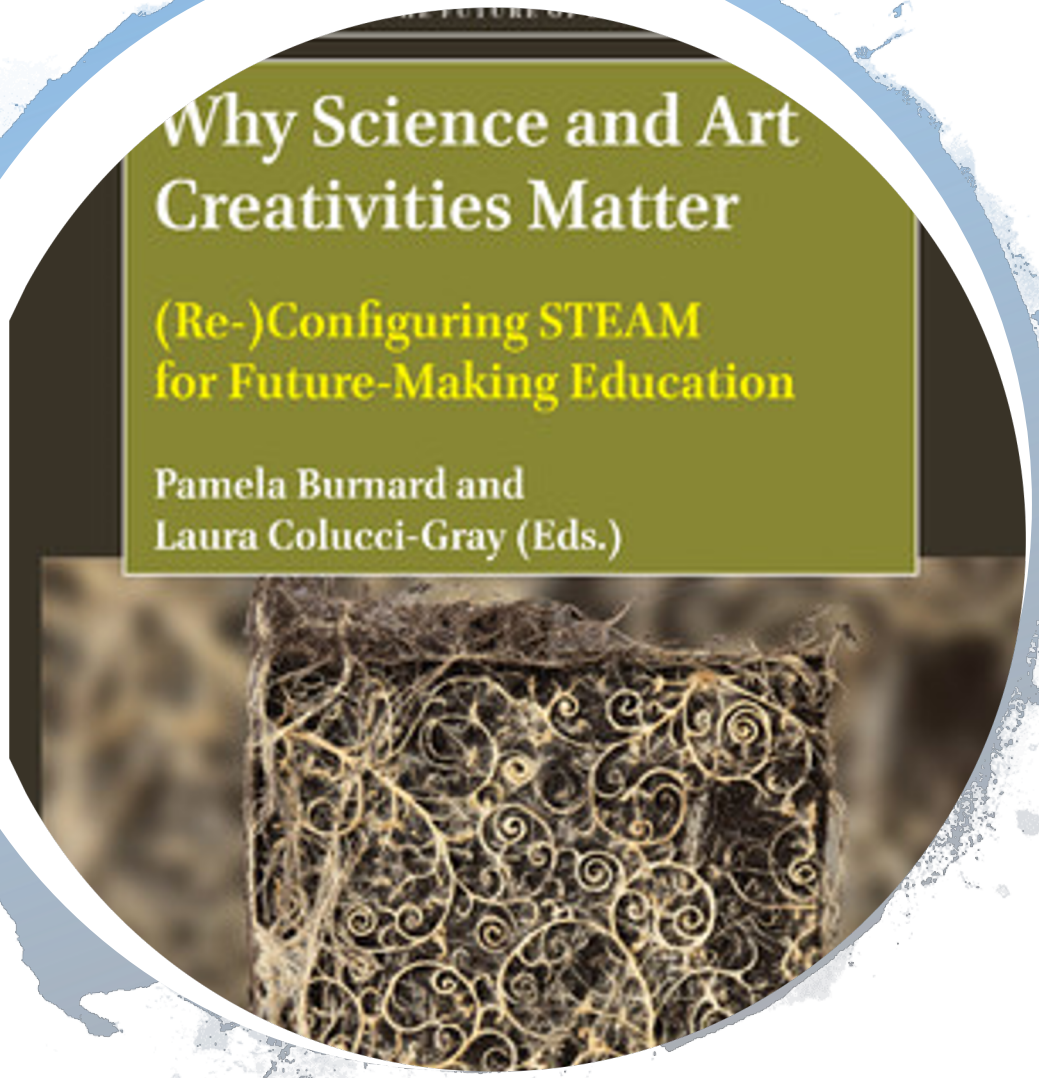


15-minute provocation:

What if sciences were arts all along: New sites of attention and inseparability

Pamela Burnard
Professor of Arts, Creativities and Educations
University of Cambridge, UK

UNIVERSITY OF CAMBRIDGE
Faculty of Education

AIMS OF BOOK

1. To extend current understandings of STEAM and debates about individuation of disciplines vis-à-vis transdisciplinary theory

2. To put posthumanism, new materialism and enactivism *to work* as a theoretical framing for expanding the repertoire of human faculties for thinking and experiencing the world

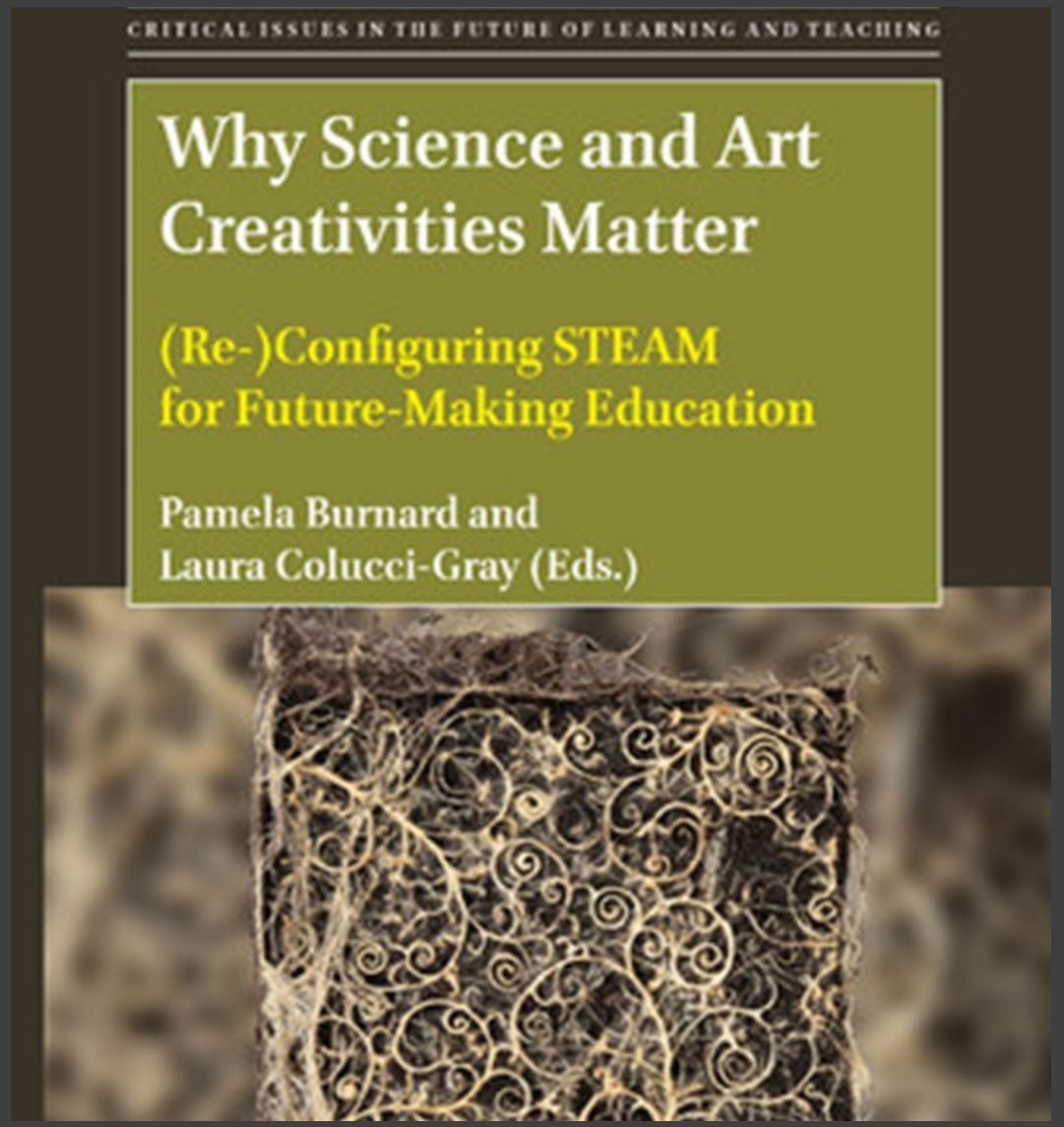
3. To offer a unique invitation to interactively re-imagine our collective futures and future-making education together today

PART 1: Positioning STEAM in Future-Making Education

PART 2: Why Does Science Matter?

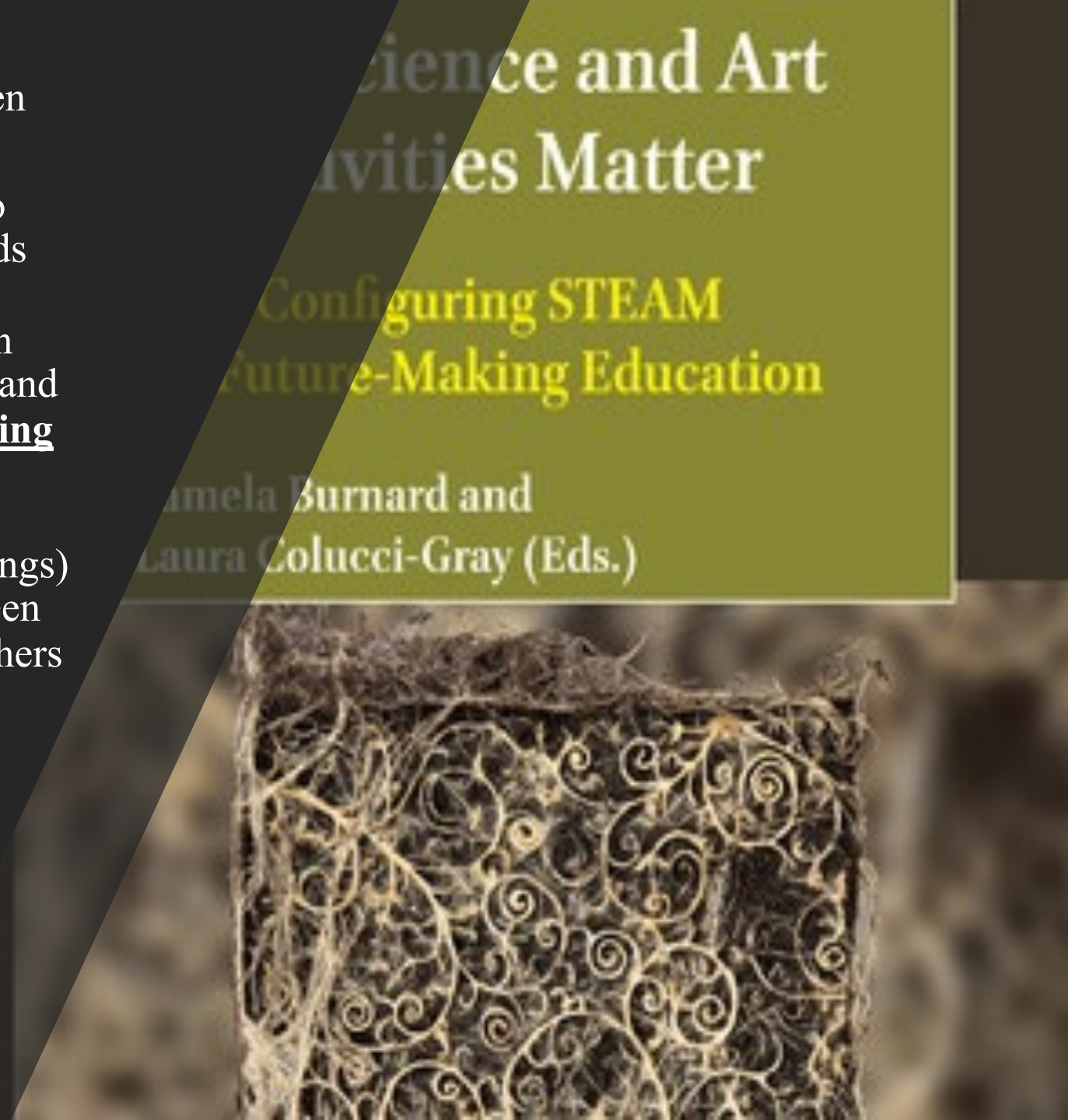
PART 3: Why Do The Arts Matter?

PART 4: STEAM Reconfiguring In Practice



Transdisciplinarity has been described as a practice that transgresses and transcends disciplinary boundaries…and seems to have the most potential to respond to new demands and imperatives. This potential springs from the characteristic features of transdisciplinarity, which include **problem focus** (research originates from and is contextualized in 'real-world' problems), **evolving methodology** (the research involves iterative, reflective processes that are responsive to the particular questions, settings, and research groupings) and **collaboration** (including collaboration between transdisciplinary researchers, disciplinary researchers and external actors with interests in the research' (Russell et al 2008, p.460-461)

Russell, A. W., Wickson, F., and Carew, A. (2008). Transdisciplinarity: Context, contradictions and capacity. *Science Direct Futures*, 40, 460-472.



1. Evidence of new **future-making transdisciplinary** ways of entangling/integrating/connecting subject disciplines not simply as acquisition of knowledges and skills but as important activities with the potential to make a real impact on one's life and one's community.
2. Evidence which affirms more strongly **the role of subjectivity in learning** not restricted to bound individuals or subject silsos, but rather as a co-operative trans-species effort that takes place transversally, displacing binaries.
3. **We argue against the idea** of science/knowledge as 'doxa'- a representation of the world - to recover instead the idea of 'artistry' as dialogue between the real and the imagined.
4. Our knowing of the world is located **in a relationship of embodied listening and attention**. The body is not a passive decoder of information, but an active interpreter, tuning in with the internal and the external world. In educational terms this means greater sensitivity to how we perceive, make and inhabit a shared world.

EXPERIENCE WORKSHOP

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MathArtWork 2: *Stressed Vitruvian Man*

MathArtWork by a male student (aged 16 years, in Grade 11) in a private school that supports learners from less privileged backgrounds**.**

Artist Statement:

"This artwork implies how Mathematics is involved in our daily lives…Mathematics could have a ***positive or negative impacts****. A few examples of* ***how we experience Math*** *daily are* ***measurements of our clothing****; which is why…you will see the right side has measurements … also shows the* ***reality of Mathematics…*** *The* ***hands*** *which cover the* ***face*** *are an* ***indication of frustration****. The answers to the equations represent that there is always a solution.. I placed the equations on different places to show that there are* ***different ways to get answer****s…to understand."*

MathArtWork 1: *Soul Number*

MathArtWork by a female student aged 15 years, in Grade 10, attending a fee-paying public school; the school community is from a low-average socioeconomic background

Artist Statement:

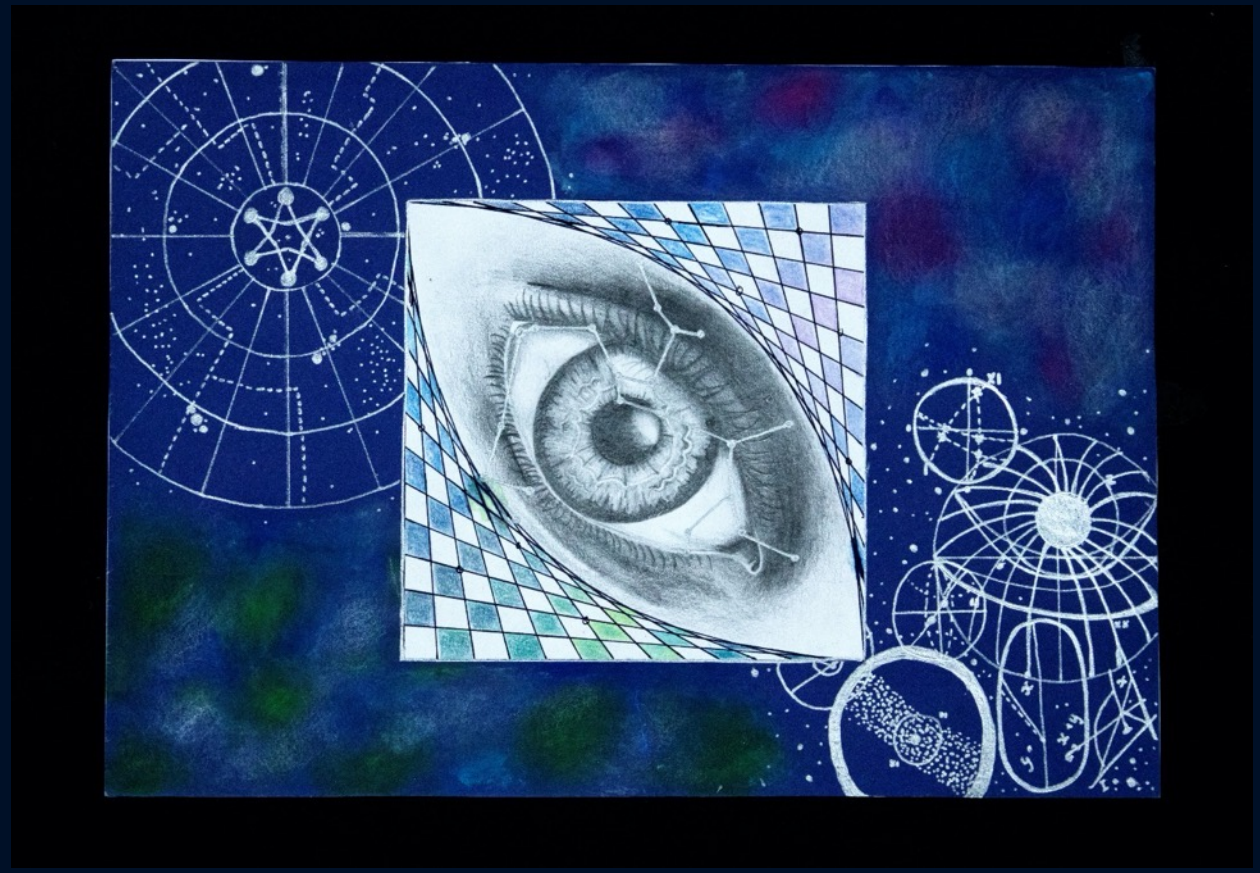
*"I have chosen to use numberlines as numbers can go on till **infinity** and our **hair** grows continuously, **non-stop**…The numberlines as **hair** is representing the **roots of our lives** as we cannot go one day without counting or using numbers to represent or solve anything. I have drawn a **little demonic girl** and as you can see the numbers close to her **head** are small numbers, but as they go on, the **numbers increase** continuously and there is **no end**. This represents the **knowledge we create in our everyday lives**. The little bit of red shows my **slow interest** in Maths. To me Maths is like a **demon slowly stealing my soul,** like I'm **becoming addicted** to it and I'm **starting to enjoy** it."*

Gr 7 & 8

What I see

Kyla Kirton

PENRYN COLLEGE



Gr 11 & 12

The True Form

Renier Luus

STELLENBERG
HIGH SCHOOL

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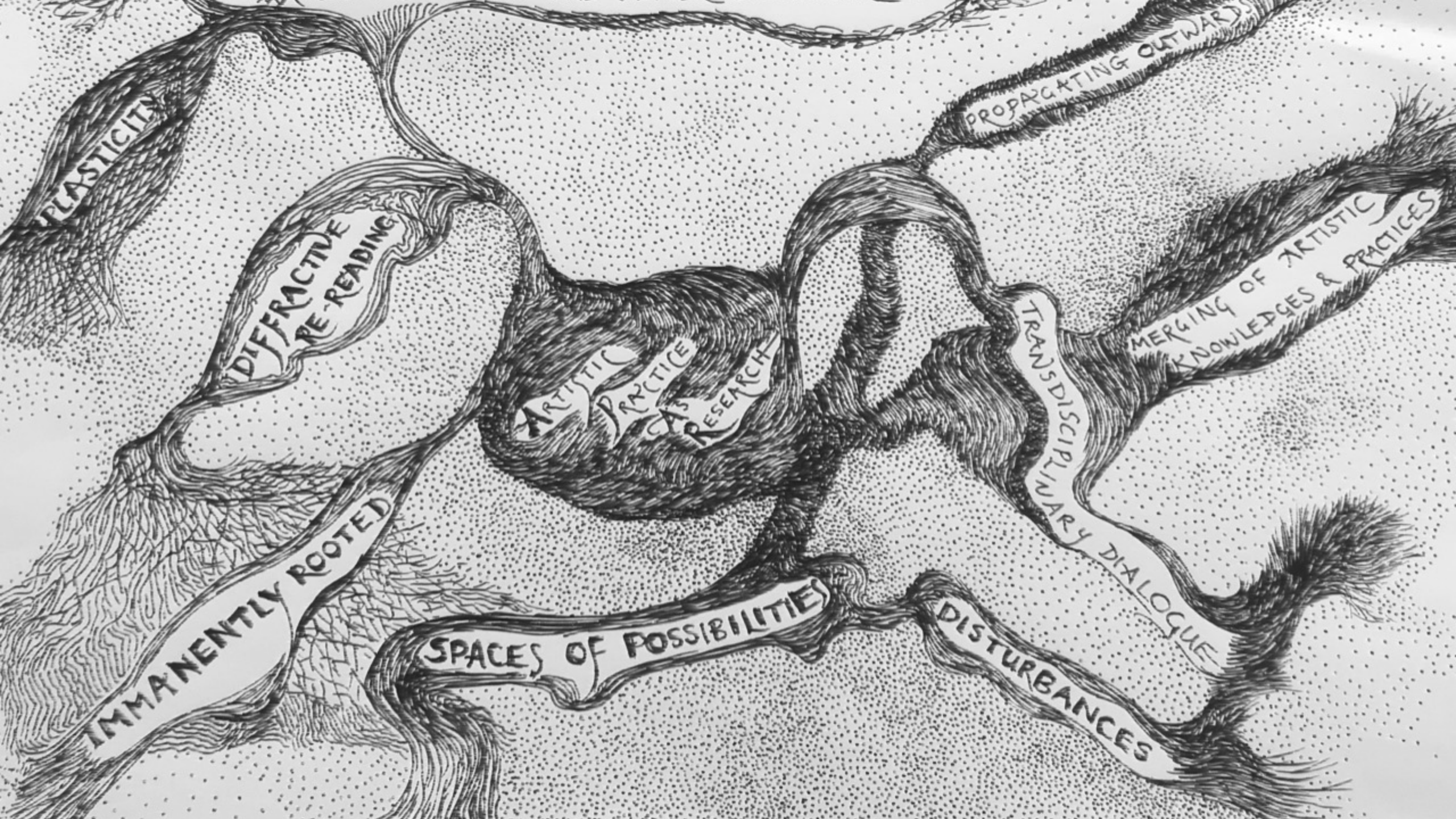
PLASTICITY
DIFFRACTIVE RE-READING
IMMANENTLY ROOTED
ARTISTIC PRACTICE AS RESEARCH
SPACES OF POSSIBILITIES
TRANSDISCIPLINARY DIALOGUE
DISTURBANCES
PROPAGATING OUTWARDS
MERGING OF ARTISTIC KNOWLEDGES & PRACTICES


INTERACTION BETWEEN THE HUMAN & NATURE
PLASTICITY
DIFFRACTIVE READING
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ARTISTIC PRACTICE AS RESEARCH
SPACES OF POSSIBILITIES
DISTURBANCES
TRANSDISCIPLINARY DIALOGUE
MERGING OF ARTISTIC KNOWLEDGES & PRACTICES
PROPAGATING OUTWARDS

WHAT IF?

1. We recognised the **pluriversality and lively relationaliites of diverse creativities**; Co-creating multiple creativities that are radically generative in the posthumanist fibre of our lives and thinking

2. We advanced **transdisciplinary practices within cross-sector collaborations** i.e. providing the necessary two-way street between disciplines; where disciplines can be integrated

3. We kept **troubling our assumptions, opening up to new living dialectic embodied forms;** Not in the sense of uncovering a reality out there, but as a way to co-construct and critique the politics of the visible, of 'situated knowledges' (always emerging from embedded and embodied entanglements between the knower and what she knows (Donna Harawy, 1988); **enabling a re-distribution of and co-dependent nature of what is seen and heard, encountered and enacted** in a museum, art gallery, classroom or in any environment; **this might involve a shift from human-centred (curation) to embrace more ecological models of agency**

THE FRONTIERS COLLECTION

EXPERIENCE WORKSHOP

www.experienceworkshop.org

Wuppuluri · Wu (Eds.)

ON ART AND SCIENCE

Shyam Wuppuluri
Dali Wu (Eds.)

ON ART AND SCIENCE

Tango of an Eternally Inseparable Duo

With an Afterword by Sir Martin Rees

Springer

CRITICAL ISSUES IN THE FUTURE OF LEARNING AND TEACHING

Why Science and Art Creativities Matter

(Re-)Configuring STEAM for Future-Making Education

Pamela Burnard and
Laura Colucci-Gray (Eds.)

BRILL | SENSE

Kristóf Fenyvesi and Tuuli Lähdesmäki (Editors)

Aesthetics of Interdisciplinarity: Art and Mathematics

This anthology fosters an interdisciplinary dialogue between the mathematical and artistic approaches in the field where mathematical and artistic thinking and practice merge. The articles included highlight the most significant current ideas and phenomena, providing a multifaceted and extensive snapshot of the field and indicating how interdisciplinary approaches are applied in the research of various cultural and artistic phenomena. The discussions are related, for example, to the fields of aesthetics, anthropology, art history, art theory, artistic practice, cultural studies, ethno-mathematics, geometry, mathematics, new physics, philosophy, physics, study of visual illusions, and symmetry studies. Further, the book introduces a new concept: the interdisciplinary aesthetics of mathematical art, which the editors use to explain the manifold nature of the aesthetic principles intertwined in these discussions.

EXPERIENCE WORKSHOP

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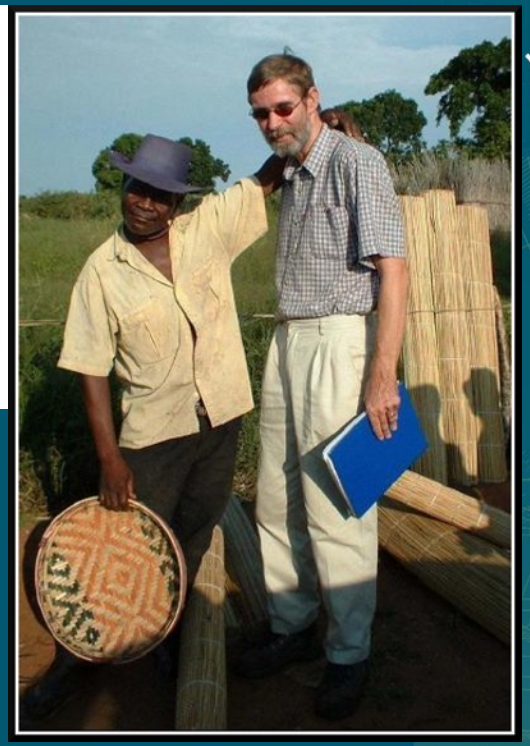

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Editors

PAULUS GERDES
(1952 – 2014)

Aesthetics of Interdisciplinarity: Art and Mathematics

Birkhäuser


UNLOCKING
RESEARCH
SCULPTING NEW
CREATIVITIES
N PRIMARY
EDUCATION
dited by
amela Burnard
nd Michelle Loughrey

Pamela Burnard pab61@cam.ac.uk **Laura Colucci-Gray** Laura.Colucci-Gray@ed.ac.uk