

International Conference

Theatre about Science

Colóquio International

Teatro sobre Ciência

Coimbra,
Portugal

9 – 11
novembro

November
9th – 11th

lectures, workshops,
performances, théâtre

palestras, oficinas,
performances, teatro

2023

Book of Abstracts

Livro de Resumos

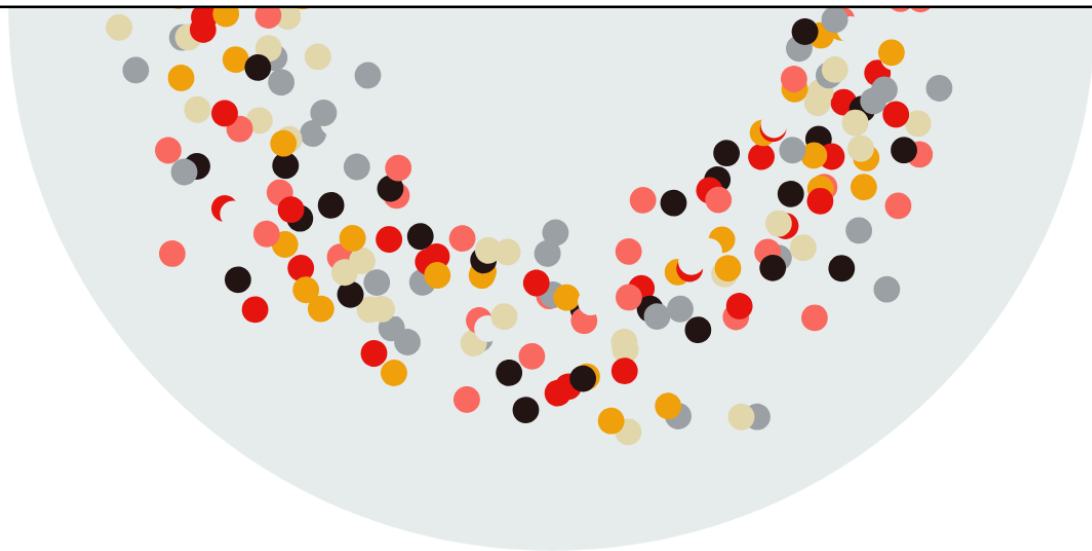
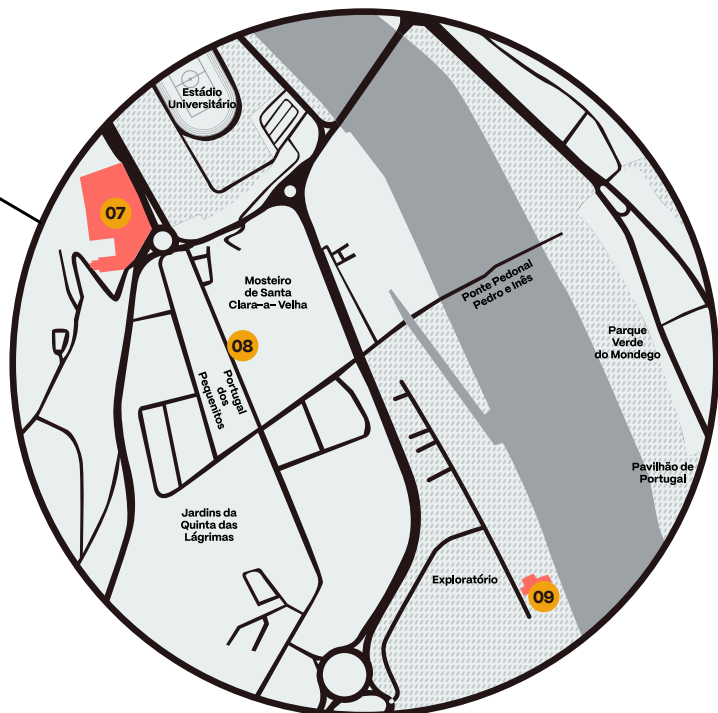
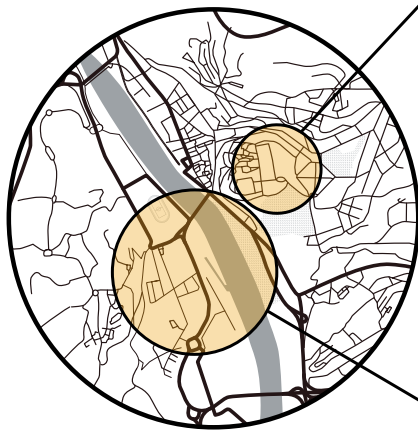


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Venues

- 01** FLUC Faculdade de Letras da Universidade de Coimbra
Largo da Porta Férrea
- 02** TPQ Teatro Paulo Quintela
FLUC, 3º piso
Largo da Porta Férrea
- 03** AIII Anfiteatro III
FLUC, 4º piso
Largo da Porta Férrea
- 04** SSP Sala São Pedro
Biblioteca Geral,
Largo da Porta Férrea
- 05** RCC Rómulo – Centro Ciência da Universidade de Coimbra
Departamento de Física,
Rua Larga, Piso 0
- 06** TAGV Teatro Académico Gil Vicente
Praça da República
- 07** CSF Convento São Francisco
Avenida da Guarda Inglesa, 1a
- 08** GSC Galeria Santa Clara
R. António Augusto Gonçalves, 67
- 09** RPM Restaurante Piscinas do Mondego
Rotunda das Lages – Sta. Clara –
Parque Verde do Mondego



Programme

Keynote Speakers (60 min)
 Oral Presentation (15 min)
 Lecture Performance (30 min)
 Short Performance (30 min)
 Workshop (90 min)
 Discussion Panel (90 min)
 Theatre (60 min to 90min)

08.nov

quarta-feira
wednesday

6:30 pm
TAGV **Welcome Drinks**

09.nov

quinta-feira
thursday

8:30 am
FLUC **Registration**

9:30 am
TPQ **Opening Session**

10:00 am
TPQ **Keynote Speaker**
Emma Weitkamp
University of the West of England

(Re)Conceptualising science communication through the lens of science theatre ©

Moderator
Mário Montenegro

11:00 am
FLUC **Coffee Break**

TPQ **Oral Presentations**

Moderator
Teresa Girão

11:30 am
Giulia Frezza,
Roger Kneebone

Serendipity in Science: Foster Conversation through the Performing Arts ©

11:45 am
Dimitar Uzunov

Science About Theatre: Our Brain on Stories ©

12:00 am
Joana Lobo Antunes *et al.*

Using theatre and storytelling in Science Communication training ©

12:15 am
Maya Tomala

Hamlet's History of Science: The Importance of Creative Texts in Science Communication ©

12:30 am
Ana Rita Álvaro *et al.*

To Sleep or not to Sleep? ©

12:45 am
Marie-Héleen Coetzee

**Food for thought: performance for science communication in Gastronomies (2022) ©
and Auntie Covidia and the curious calamities of COVID-19 (2021)**

AIII **Oral Presentations**

Moderator
Andrea Brunello

11:30 am
Daniel Erice

Teatro para armar (A theater to assemble): 17 years of scientific theater ©

11:45 am
Kailani Tavares Guimarães,
Carla da Silva Almeida

Theatre, Science and Humor: a study from the play "Paracelso, o Fenomenal" ©

- 12:00 am Abigail Bender
Science on Stage: Transforming Scientific Research Through a Performance Lens ⓘ
- 12:15 am George N. Vlahakis,
Georgia Psychou
**Theatre as a vehicle for science communication in Greece.
A review of the present situation and a proposal for the future** ⓘ
- 12:30 am Carla Almeida
Science–theatre at the Museum of Life Fiocruz: studying and empowering the audience ⓘ

1:00 pm **Lunch**
FLUC

- 2:30 pm **Workshop**
AIII
Faron Moller,
Geinor Styles *et al.*
Theatre Meets STEM Outreach – A Marriage Made in South Wales ⓘ
- Moderator**
Sara Varela Amaral
- 2:30 pm **Workshop**
RCC
Nigel Townsend,
Judith Johnson
Theatre of Debate Generator Workshop ⓘ
- Moderator**
Clara Barata

4:00 pm **Coffee Break**
FLUC

- TPQ **Short Performances**
Moderator
Joana Lobo Antunes
- 4:30 pm Monica Lakhanpaul,
Nell Hardy *et al.*
CHAMPIONS: theatre in policy recommendations from scientists ⓘ
- 5:00 pm Tatiane Santoro de Souza *et al.*
A revolutionary discovery OR when actresses decide to do science ⓘ
- 5:30 pm James Walsh *et al.*
"The Last Magician" A New Musical about Isaac Newton ⓘ

9:30 pm **Theatre**
TAGV **Matheatre**
Nikola Tesla and The Mother of Invention ⓘ

10.nov

sexta-feira
friday

- 10:00 am **Keynote Speaker**
TPQ
Steve Abbott
Middlebury College
Stages of Uncertainty: How Theater Reveals the Human Truth of Mathematics ⓘ
- Moderator**
Sara Varela Amaral

11:00 am **Coffee Break**
FLUC

- TPQ **Oral Presentations**
Moderator
Kristen Shepherd-Barr
- 11:30 am Mário Montenegro
On the verge of modern science: the emergence of the scientist on stage ⓘ
- 11:45 am José Maria Vieira Mendes
'Modern Science' in Brecht's The Life of Galileo ⓘ
- 12:00 am Ricky Coates,
Sadie Bowman
Beyond the Boom ⓘ
- 12:15 am Rossella Spiga *et al.*
Performing astrophysics: the spectator as a voyager ⓘ
- 12:30 am Kostas Gavroglu
Galileo meets Pope Urban VIII: A play concerning encounters we know nothing about ⓘ

AIII	Oral Presentations
	Moderator Carlos Fiolhais
11:30 am	Daniel Erice Baroque science: a historical journey through the relationship between science and theatre ©
11:45 am	Dimitar Uzunov Science Fiction as a Powerful Tool to Communicate Science ©
12:00 am	Iryna Kastylanchanka Beyond a Knowledge of Ourselves toward an Understanding of Alter Ego, or Androids in contemporary Japanese theatre
12:15 am	Piotr Mirowski <i>et al.</i> Visual Theatrical Improvisation alongside Artificial Intelligence Image Generators ©
12:30 am	António-José Gonzalez, Inês Peceguina Playback Theatre and scientific research ©
12:45 am	Leonardo Maciel Moreira Meaning-making of university students in a theater about science ©

1:00 pm
FLUC
Lunch

2:30 pm TPQ	Workshop Margarida Pedrosa de Lima <i>et al.</i> From action to transformation: The Oppressed Theatre as a tool for reflection on science © Moderator Ana Santos Carvalho
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AIII	Lecture Performances
	Moderator Mário Montenegro
2:30 pm	David Quang Pham ELLIPSES – A Musical 13.8 Billion Years in the Making © featuring Teresa Aguiar e Bernardo Alves
3:00 pm	Nathan Jerpe Maxwell Sebastian Is it Really Just a Fishtank? A Topology of Anatomic Theater ©
3:30 pm	Alexander Kelly Dolphin Philosophy ©

4:00 pm
FLUC
Coffee Break

4:30 pm SSP	Keynote Speaker Catherine Courtet Agence Nationale de la Recherche Penser avec le théâtre. L'expérience du dialogue entre la création et la recherche © Moderator Marta Teixeira Anacleto THIS PRESENTATION WILL BE IN FRENCH
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SSP	Oral Presentations
	Moderator Miguel Ferreira
5:30 pm	Thiago Santos <i>et al.</i> Improving the Healthcare professional-patient relationship with drama ©
5:45 pm	Nuno Dias <i>et al.</i> Application of Theater in Health Sciences Teaching ©

AIII	Oral Presentations
	Moderator José Maria Vieira Mendes
5:30 pm	Daniel Gamito-Marques Matters of Life and Death: uses of historical knowledge of medicine in the theatre play All Too Human (Demasiado Humano) ©
5:45 pm	Niloufar Davari Expressive Body and Censorship in Iran. Limits and Overcoming in the Psychophysiological Process of the Performer ©
6:00 pm	Paulo Toledo Theatre as a historiographic source: the Comedy of Manners and the forms of slave society in 19th century Brazil ©

9:30 pm Theatre
CSF Marionet
iMaculada

11.nov

sábado
saturday

10:00 am **Keynote Speaker**

TPQ Liliane Campos
Sorbonne Nouvelle

Contemporary Performance as Microscope and Macroscope ⓘ

Moderator
Fernando Matos Oliveira

11:00 am **Coffee Break**
FLUC

TPQ **Oral Presentations**

Moderator
Daniel Gamito-Marques

11:30 am Kirsten Shepherd-Barr
Modernist Theatre and Science: Two Plays ⓘ

11:45 am Daniel Abdalla
'A Strange and Secret Thing': Staging Heredity in the Harlem Renaissance ⓘ

12:00 am Sara Cole
**'But When Is This Farce To End?': Science Performance
In Elizabeth Inchbald's play 'Animal Magnetism'** ⓘ

12:15 am Thelma Lopes
Theater and Science in Brazil: origins and interactions in the 19th century ⓘ

All **Oral Presentations**

Moderator
Clara Barata

11:30 am Vânia Rodrigues,
Fernando Matos Oliveira
To green or not to green: theatre management and the ecological imperative ⓘ

11:45 am Mário Montenegro
Theatre to promote public awareness for the rehabilitation of urban streams ⓘ

12:00 am Alice Barbaza
Scientists and lecture-performance: towards an ecology of knowledge ⓘ

12:15 am April Thaunt Aung
**What are Designer Babies?
A Blurring of Social Engineering and Genetic Engineering on Stage in Singapore** ⓘ

12:30 am **Short Performance**
TPQ Coimbra Impro
Science of the Unexpected – Improv Presentation ⓘ

1:00 pm **Lunch**
FLUC

2:30 pm **Discussion Panel**

TPQ Joana Ricarte *et al.*
The potential of participatory theater to foster inclusive values, policies, and identities: ⓘ
an interdisciplinary approach

Moderator
Clara Barata

All **Lecture Performances**

Moderator
Carla Almeida

2:30 pm Nigel Townsend,
Sudha Bhuchar
The Lens ⓘ

3:00 pm Maite Guilera
How can I speak again? – Sarah Kane's "4.48 Psychosis", Insane Stories in First Person ⓘ

3:30 pm Alexander Matthias Gerner
"Hmm, that's an interesting question": Hacking into Human AI – "Dialogues" ⓘ

4:00 pm
FLUC **Coffee Break**

4:30 pm
TPQ **Short Performance**
Fred Kempner
To Be Or Not To Be – A Play Exploring AI ⓘ
Moderator
Ana Santos Carvalho

All **Lecture Performances**
Moderator
Rita Alcaire

4:30 pm
Ricardo Seça Salgado
Para Vós [For you]: thinking five years of affect activism ⓘ

5:00 pm
Graça P. Correia
Towards an Eco-Empathic Theatre: Science and Technology in Contemporary Theater ⓘ

5:30 pm
All **Closing Session**

5:30 pm
TPQ **Theatre**
Teatro Para Armar
The weather in the clouds ⓘ

8:00 pm
RPM **Conference Dinner**

10:30 pm
GSC **After Party**

12.nov

domingo
sunday



10:00 am **Visit to the University historical sites**



Keynote Speakers



Catherine Courtet

Scientific manager in Social Sciences and Humanities Department, Agence nationale de la recherche. With Paul Rondin, she initiated the [Rencontres Recherche et Création](#) organized since 2014 by the ANR and the Festival d'Avignon. She co-directed (with M. Gollac) *Risques du travail, la sante négociée* (La Découverte, 2012) and with M. Besson, F. Lavocat and A. Viala, *Corps en scènes* (2015), *Mises en intrigues* (2016), *Violence et Passion* (2017), *Le Désordre du monde* (2018), *Le Jeu et la Règle* (2019) et *Traversée des mondes* (2020) and with M. Besson, F. Lavocat and F. Lecercle, *La mémoire du futur* (2022) chez CNRS Éditions, Paris.



Emma Weitkamp

Professor of Science Communication and Co-Director of the Science Communication Unit at the University of the West of England. Her research focuses on the participants in science theatre (theatre practitioners, scientists and audiences). Recent books include *Science & Theatre* (co-authored with Carla Almeida) and *Creative Research Communication* (co-authored with Clare Wilkinson).



Liliane Campos

Lecturer in English and Theatre studies at the Sorbonne Nouvelle, and fellow of the Institut Universitaire de France. Her research explores how art transforms the images and discourse of science. Books include [*Sciences en scène dans le théâtre britannique contemporain*](#) and [*Life, Re-Scaled: The Biological Imagination in Twenty-First-Century Literature and Performance*](#).



Steve Abbott

Steve Abbott is a professor of mathematics at Middlebury College (Vermont, USA) with a long term interest in real analysis, logic, and foundations. Bewitched by his experience as a consultant on a production of Tom Stoppard's *Arcadia* over twenty years ago, Professor Abbott devoted himself to researching, watching, and eventually directing plays that engage mathematics. The results of this intellectual journey are recounted in *The Proof Stage* (Princeton University Press, 2023), which explores how playwrights from Samuel Beckett to Simon McBurney brought the power of abstract mathematics to the human stage.

Scientific Committee



Andrea Brunello

Independent researcher, playwright, director and actor, Andrea has a Ph.D. in Physics. He works at the boundary between theatre and science, creating original works that have been performed all over Europe and beyond. He is the co-founder and director of [Jet Propulsion Theatre](#).



Carina Bartleet

Carina studied the Biological Sciences at Oxford University before moving to Drama for her postgraduate study. She has a PhD in Intertextuality and the work of dramatist, Sarah Daniels. Her research interests combine her twin loves of the theatre and science and she specialises in exploring the intersections between the natural sciences and theatre with special focus on the biological sciences, the climate crisis, medicine and malady and the theatre and theatre and gender. Carina has guest edited two special editions of *Interdisciplinary Sciences Reviews* on new directions in theatre and science and published in *The Cambridge Companion to Science and Science* (edited by Kirsten Shepherd-Barr, 2020) and a chapter on *Theater and Performance* in Iris van der Tuin (ed.), *Gender: Nature*, Macmillan Reference USA (2016). As well as an introduction to a new (2021) edition of Sarah Daniels' *Neaptide*.



Carla Almeida

Science communicator and researcher at Museu da Vida, the science museum of the Oswaldo Cruz Foundation (Fiocruz), in Brazil, where she works in the areas of public engagement with science; science, media and society; and science-theatre. Almeida teaches on Fiocruz's Diploma Course in Communication and Popularization of Science and on the Master's in Communication of Science, Technology and Health. She is co-author of the books *Cordel e Ciência: A Ciência em Versos Populares*, *Ciência em Cena: Teatro no Museu da Vida* and *Science & Theatre: Communicating Science and Technology with Performing Arts*.



Carlos Fiolhais

Full professor in the Department of Physics at the University of Coimbra since 2000. Author of more than 60 books and numerous scientific, pedagogical and dissemination articles. He is the recipient of several National awards. Former director of the General Library of the University of Coimbra, the Knowledge area at the Francisco Manuel dos Santos Foundation and the Rómulo - Ciência Viva Center at the University of Coimbra. Current director of the Ciência Aberta collection from book publisher Gradiva.



Daniel Gamito-Marques

Research Fellow at the Interuniversity Centre for the History of Science and Technology (CIUHCT). Historian of the connections between science and colonialism in Africa (19th–20th cent.). Works as a professional playwright and dramaturge since 2016. Explores the use of historical knowledge of the sciences in theatre.



Joana Lobo Antunes

Head of Communication at Instituto Superior Técnico. Lecturer in Science Communication and Social Media for Scientists, FCSH NOVA and Universidade Nova de Lisboa Doctoral School. Her main interests are the use of theatre improvisation techniques and storytelling in Science Communication. Coordinator of science radio show *90 Segundos de Ciência*. Founder and former President of Portuguese Science Communicators Network SciComPT.



Kirsten Shepherd-Barr

Professor of English and Theatre Studies at the University of Oxford. Her books include *Science on Stage: From Doctor Faustus to Copenhagen*, *Theatre and Evolution from Ibsen to Beckett*, and most recently *The Cambridge Companion to Theatre and Science*.



Teresa Girão

Director of the Botanic Garden (University of Coimbra) and researcher in science communication at the Centre for Functional Ecology – Science for People & the Planet (CFE). Her research activity was firstly focused on the field of biotechnology and neuroscience. She now focuses on the impact of science and technology and of science communication activities to society.



Paul Johnson

Paul is Professor of Theatre and Performance, Deputy Provost at the University of Chester and Head of University Centre Shrewsbury. He studied Physics and Theatre Studies at the University of Glasgow before undertaking a PhD on the use of science as a framework for writing about performance. He has published variously on performance and science, as well as writing a number of science related plays. He convened the Performance and Science working group of the Theatre and Performance Research Association (TaPRA) and is currently co-editing the *Routledge Companion to Performance and Science*.

Organizing Committee



Mário Montenegro

Marionet [↗](#)

CEIS20 [↗](#)

Theatre director, actor, playwright, professor and senior researcher at the Centre for Interdisciplinary Studies of the University of Coimbra. He is the artistic director of Marionet, a theatre company focused on the interplay between theatre and science, where he directed more than 50 plays. His research interests relate to the interactions between the performing arts and science, including science dramaturgies, worldwide production of plays related to science, research-based theatre, theatre with researchers and the performing arts in science communication.



Fernando Matos Oliveira

FLUC [↗](#)

CEIS20 [↗](#)

Director of the PhD Programme in Art Studies at the University of Coimbra, where he teaches in the areas of Performance and Theatre Studies. His main areas of interest are Modern and Contemporary Theatre, and Performance Art. He has been Director of the Academic Theatre of the University of Coimbra between 2011 and 2023 and is a Senior Researcher at the Centre for Interdisciplinary Studies.



Sara Varela Amaral

CNC-UC 

Head of Science Communication Office at CNC. Sara has been involved in several projects that aim to establish innovative strategies that promote the appropriate communication between scientists and different audiences, and to foster scientific education in biomedical field. Her research interests are science communication strategies, impact evaluation methods, scientific culture and citizenship, public engagement in science, science education, fundraising and art and science initiatives.



Ana Santos Carvalho

iiiUC 

Science Communication Coordinator and Researcher at the Institute for Interdisciplinary Research (iiiUC) from University of Coimbra (UC). She is responsible for several initiatives at the UC, including the European Researchers' Night, the Three Minute Thesis Competition(UC 3MT), SoapBox Science Coimbra. She also collaborates in training and supporting initiatives at UC such as the UC Doctoral Schools, Initiative of Promotion of Scientific Culture, Research Seed Awards, among others. She has been part of the organizing committee of several national and international scientific events and of Science Communication initiatives in the city of Coimbra such as PubhD Coimbra or Pint of Science. From pharmacology and neuroscience research fields, she dedicates now to science communication and public engagement activities to several publics.



Clara Barata

iiiUC [↗](#)

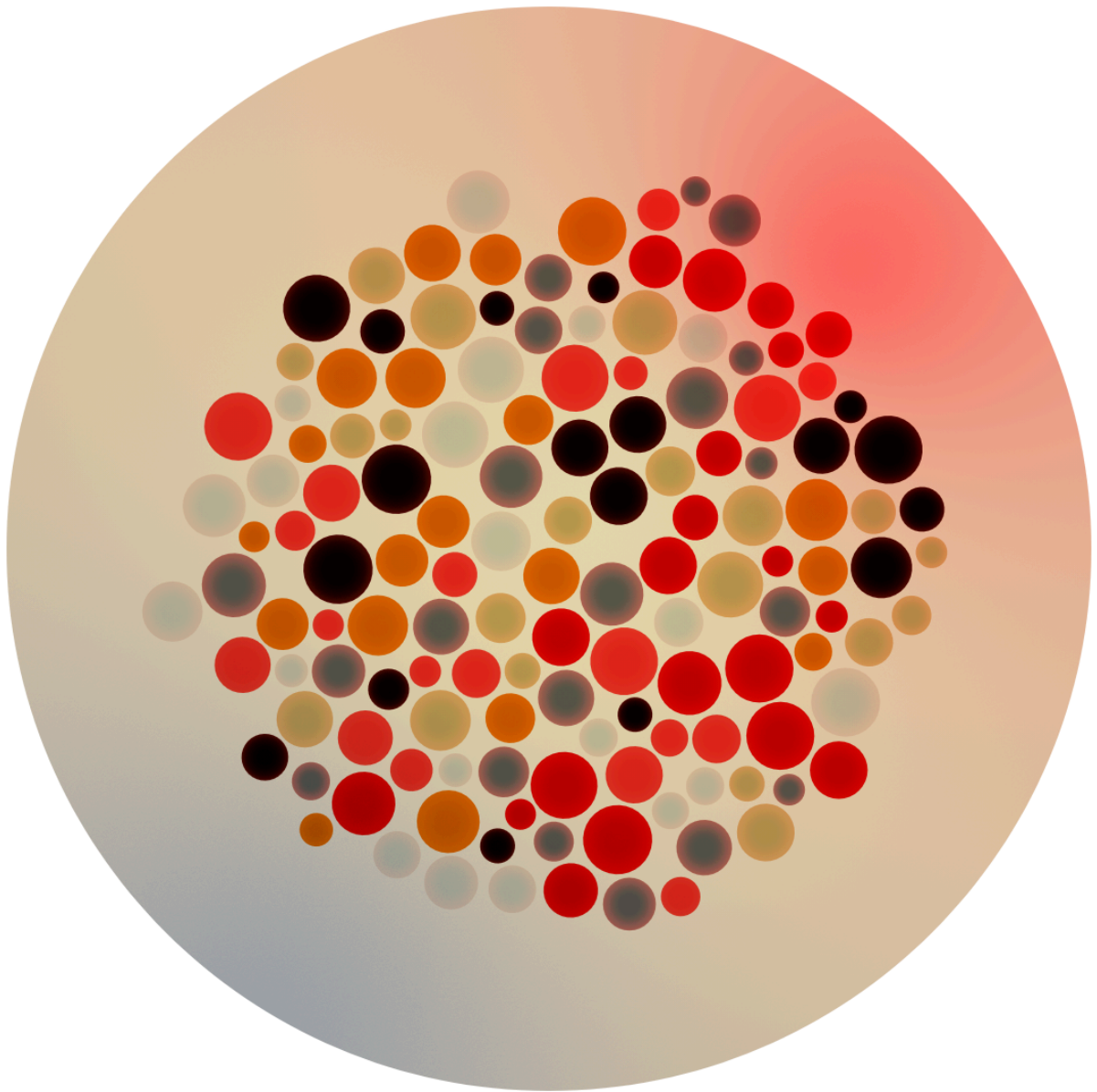
Clara Barata is the Science Manager for the Strategic Area "Heritage, Culture and Inclusive Society" at the University of Coimbra. She was principal investigator in the H2020 projects ISOTIS (Inclusive Education and Social Support to Tackle Inequalities in Society) and PROGRESS Playgroups for Inclusion at the University of Coimbra, as well as Marie Curie Individual Fellow at ISCTE-IUL. She was also an analyst for the Organization for Economic Co-operation and Development (OECD).



Francisca Moreira

Marionet [↗](#)

Photographer and production manager at Marionet theatre company. Theatre Production teacher at Escola Superior de Educação de Coimbra. Producer at musical and cultural agency Lugar Comum. Has a degree in Communication and Multimedia Design and a specialisation in Marketing and Communication. Cat lover.



Keynote Presentations

09.nov

Thursday

10:00 am
Teatro Paulo
Quintela

Keynote Speaker**Emma Weitkamp**

University of the West of England

(Re)Conceptualising science communication through the lens of science theatre

In this presentation, I will explore some of the ways that science theatre can help us think differently about science communication practices. Focusing on theatre aimed at adults, I will consider how science theatre fits into and also challenges science communication perspectives. I will consider science theatre that both overtly engages with science communication and that theatre which engages with science, but not directly within the frame of science communication to understand how we might learn from both framings.

Through this exploration of science theatre and science communication, I aim to draw out areas where these related, but not entirely overlapping, practices can learn from each other. I also aim to set out a research agenda highlighting potentially fruitful areas for research and future collaborations.

10.nov

Friday

10:00 am
Teatro Paulo
Quintela

Keynote Speaker**Steve Abbott**
Middlebury College

Stages of Uncertainty: How Theater Reveals the Human Truth of Mathematics

In this presentation, I will explore some of the ways that science theatre can help us think differently about science communication practices. Focusing on theatre aimed at adults, I will consider how science theatre fits into and also challenges science communication perspectives. I will consider science theatre that both overtly engages with science communication and that theatre which engages with science, but not directly within the frame of science communication to understand how we might learn from both framings. Through this exploration of science theatre and science communication, I aim to draw out areas where these related, but not entirely overlapping, practices can learn from each other. I also aim to set out a research agenda highlighting potentially fruitful areas for research and future collaborations.

10.nov

Friday

4:30 pm
Sala São Pedro

Keynote Speaker**Catherine Courtet**
Agence nationale de recherche

Penser avec le théâtre L'expérience du dialogue entre la création et la recherche



**This presentation
will be in French**

Depuis 2014, l'Agence nationale de la recherche et le Festival d'Avignon organisent les Rencontres Recherche et Création. Elles réunissent metteurs en scène, auteurs, comédiens, et chorégraphes programmés au Festival d'Avignon et chercheurs en sciences humaines et sociales et en sciences et neurosciences cognitives.

Le parti pris de ces Rencontres est de mettre en résonance la pensée des œuvres et les travaux de recherche les plus récents.

Chaque année le programme des Rencontres est guidé par les spectacles du Festival : le théâtre grec (Iphigénie, Antigone, Enée, Ulysse), Shakespeare (Richard III), ou encore le théâtre contemporain (Olivier Py, Kevin Keiss et Maelle Poésy, Tiago Rodrigues).



Le spectacle vivant, comme la fiction, sollicite nos imaginaires, suscite une expérience sensible, émotionnelle, mais aussi cognitive. La démarche scientifique mobilise l'analyse, l'observation, l'expérimentation, la comparaison. En dépit de leurs différences, la création et la recherche ont en commun de nourrir à la fois notre expérience individuelle et collective et la compréhension du monde.

Grace à la pluridisciplinarité des formes artistiques et des disciplines scientifiques, l'expérience des Rencontres Recherche et Création permet d'ouvrir de nouvelles perspectives pour la compréhension des œuvres et de leur réception. Le dialogue entre les œuvres et la recherche scientifique, entre les savoirs, entre les périodes historiques, entre les cultures, permet aussi d'approcher autrement les transformations des sociétés, des imaginaires, tout autant que l'actualité immédiate.

Since 2014, the National Research Agency and the Festival d'Avignon have organized the Rencontres Recherche et Création, which bring together directors, authors, actors, and choreographers programmed at the Festival d'Avignon and researchers from the humanities and social sciences, cognitive sciences, and neurosciences.

The aim of the Rencontres is to create a dialogue between the dramatic works and current research.

Each year the program is guided by the works performed: the heroines and heroes of the Greek theatre (*Iphigenia*, *Antigone*, *Aeneas*, *Ulysses*), Shakespeare's *Richard III*, or contemporary productions of Olivier Py, Kevin Keiss, Maelle Poésy or Tiago Rodrigues.

Like fiction, live performances stimulate our imagination and produce an experience that is both emotional and cognitive. The scientific approach draws on analysis, observation, experimentation, and comparison. Despite their differences, creation and research share a desire to nourish both our individual and collective experience and our understanding of the world.

Owing to the multidisciplinary nature of artistic forms and scientific disciplines, the Rencontres Recherche et Création help open new perspectives for the understanding of performances and their reception. The dialogue between the works presented and scientific research, between different forms of knowledge, between historical periods, between cultures, helps make it possible to approach in a different way the transformations of societies, our ways of seeing, as well as the current situation.

11.nov

Saturday

10:00 am
Teatro Paulo
Quintela

Keynote Speaker**Liliane Campos**

Sorbonne Nouvelle

Contemporary Performance as Microscope and Macroscope

As humans living in the 21st century, it is urgent that we learn to perceive invisible scales. Pandemics, extinctions, and the pervasive sense of ecological crisis are forcing us to realize our dependence on inner and outer ecosystems. Every bite of food we eat not only increases our species' planetary footprint, but also feeds the trillions of microbes that cohabit within us. In this talk, I will ask how contemporary performance helps us to perceive the invisibly small, the staggeringly large, and the incredibly complex. I will consider the theatre as a connector of scales, and ask what aesthetics shape these connections. My focus will be on recent performance that moves away from metaphorical representations of other scales, towards non-analogical tropes and signifiers. In the shadow of the Anthropocene, I propose that such aesthetics perform vital epistemic work, shifting attention away from the single scale towards the assemblages and feedback loops that structure complex systems. In so doing, performance invites us to rethink our assumptions about agency, action, and representation.



Oral Presentations

09.nov

Thursday

11:30 am
Teatro Paulo
Quintela

Oral Presentation**Giulia Frezza**

Imperial College London

Roger Kneebone

Imperial College London

Serendipity in Science: Foster Conversation through the Performing Arts

This paper aims to discuss the 'Serendipity Programme': a six-month initiative we created to encourage scientists', students' and other staff members' serendipitous conversations in our institution (Imperial College London). Scientists' ability to fully respond to interdisciplinary challenges (e.g., global health) is not only enrooted in their in-depth knowledge of their discipline; it also develops through contact with other researchers, and, more broadly, through the capability to connect with societal demands. Our work will focus on two main difficulties highlighted by STS' fieldwork in scientific organisations and how with the Serendipity Programme we have tried to address them.

First, scientific practice requires scientific and human skills, which are embedded in interaction and communication and not only expressed verbally (such as visualisation, emotions, and gestures). These skills are what we refer to as scientists' implicit embodied knowledge (vs their explicit scientific knowledge) which more accurately describes a 'performing' interacting individual than a 'thinking brain' in a vacuum –as scientific work is often understood by society.

Second, open-minded exchange of ideas is key to ground-breaking research; yet academic science often takes place in silos. Hierarchies, role and disciplinary boundaries, as well as cultural stereotypes and norms may get in

the way. For instance, in many research groups text remains the dominant mode for scholarly communication. This can disempower those whose creative process is sparked through interaction with people outside their discipline and whose ideas and insights are more easily conveyed through non-verbal modes such as drawing, gesture and bodily performance.

Following creative work done in science communication, we will discuss the design, piloting and implementation of the Serendipity Programme. Instead of focusing on conventional conversational techniques (such as openings and catch phrases) aimed to enhance researchers' skills to communicate their science, in the Serendipity Programme we explored more hidden, embodied aspects of 'performing science' aimed to support individuals' own capabilities and interactions in an inclusive and playful environment. Together with the artists-in-residence of the Centre for Performance Science, we developed a series of workshops aimed to crossbreed artistic and scientific practices. The Serendipity Programme brought into view essential embodied aspects that have been traditionally overlooked in research, communication, and training of scientists by focusing on 'performing habits' rather than scientific output and traditional communicational skills.

09.nov

Thursday

11:45 am
Teatro Paulo
Quintela

Oral Presentation

Dimitar Uzunov
Arte Urbana Collectif

Science About Theatre: Our Brain on Stories

"Tell me a fact and I'll learn. Tell me the truth and I'll believe. But tell me a story and it will live in my heart forever"

Native American proverb

What makes a story a good one? Why is theatre such a powerful media to tell that story? What if science holds the key! In his lecture Dimitar Uzunov will explore the intersection of neurology, cognitive psychology, and storytelling, discover how our brains perceive and respond to different elements of a story, especially those presented on stage, and learn how to use these insights to create captivating and memorable narratives.

The art of storytelling is essential because humans are story-driven creatures. We need stories to convey meaning, values and hopes. Human knowledge is based on stories and the human brain is a sort of cognitive machine necessary



to understand, remember and tell stories. Stories mirror human thought, as humans think in narrative structures and most often remember facts in story form. Neurologists confirm that when a human hears straight data, only the language parts of our brains work to decode the meaning of this data. But when we hear a story, all parts of the brain that we would use if we were actually experiencing that story light up and become active.

For millennia people have been using stories. The oldest representation of storytelling found so far is in the Chauvet cave in France, dating to 36 000 years ago. The cave paintings are believed to tell the story of a volcanic eruption. Theatre emerged as a distinctive art form and entertainment in Ancient Greece and for most of the last 2500 years of human civilization it has been a favourite form of storytelling. Today theatre competes with more recent storytelling media such as literature, cinema, TV, and video games. For their digital nature they are more widely represented, but theatre remains probably the most powerful among them. The reason would be biological: human beings performing in front of us creates a real hurricane of hormones and neurotransmitters in our brains.

The lecture will deconstruct the power of stories and theatre and give tools to reconstruct them for the use of science communication.

09.nov

Thursday

12:00 am
Teatro Paulo
Quintela

Oral Presentation

Joana Lobo Antunes

Instituto Superior Técnico and Faculdade de Ciências Sociais e Humanas

Ana Sanchez

--

Romeu Costa

--

Using theatre and storytelling in Science Communication training

Researchers are frequently required to present their work in public settings, for audiences ranging from peers to lay audiences of all ages. Endowing researchers with a good set of tools to be on stage, to face an audience, to properly use their voice and their body in the available space, as well as building a narrative that serves their science story, are skills that can increase not only the public understanding of science but also contribute to a better delivery of their message.

Since 2012, we have been delivering a one day course for PhD students at Universidade Nova de Lisboa where we use theatre improvisation techniques and storytelling, framed in a three day Science Communication course. In this oral presentation we will present the main structure of the course and a brief analysis of the results and impact of these courses in the perceived personal and professional development of our students.

09.nov

Thursday

12:15 am
Teatro Paulo
Quintela

Oral Presentation

Maya Tomala
McMaster University

Hamlet's History of Science: The Importance of Creative Texts in Science Communication

For people who choose not to pursue scientific studies outside of high school, scientific papers and articles written in a primarily academic tone can be confusing and uninteresting. This builds a barrier between the general public and their ability to access scientific research. Not only are creative works, such as plays, movies, and music more engaging, they are geared toward the general public. Humans have also historically used these creative mediums to cope with and understand difficult concepts. For instance, Shakespeare's *Hamlet*, which was penned and performed during the shift to a heliocentric universe, offers a largely overlooked reflection of the Copernican Revolution. The scientific significance of *Hamlet* serves as the foundation for an interdisciplinary course that intends to teach science undergraduates the importance of creative writing in science communication.

The first half of the course consists of a New Historicist analysis of *Hamlet*. By the end of those six weeks students will be able to: (1) summarize the theory of New Historicism and how it relates to the history of science, (2) describe Hamlet's connection to the Copernican Revolution using a combination of scientific and literary concepts, and (3) justify creative text as a method of scientific communication. The second half of the course consists of an independent project in which students communicate a scientific concept through a creative medium. By the end of those 7 weeks, students will be able to: (1) translate high-level scientific concepts into accessible, interesting stories, (2) understand how a creative medium can inform and impact the content being communicated, and (3) reflect on their science communication skills, identifying how they will utilize their creative writing techniques moving forward. This course intends to extend the boundaries of interdisciplinary learning by

exploring the interconnectedness of science and the arts—uncovering knowledge that could not have been found through studying them separately. The course also encourages science students to not look down on the arts but rather to look at them, as they best understand the challenge of accessibility and engagement when it comes to communicating a message to the general public.

09.nov

 Thursday

12:30 am

Teatro

Paulo Quintela

Oral Presentation
Ana Rita Álvaro

CNC-UC - Center for Neuroscience and Cell Biology, University of Coimbra
 CIBB - Centre for Innovative Biomedicine and Biotechnology, University of Coimbra
 IIIUC - Institute of Interdisciplinary Research, University of Coimbra, Coimbra

Bárbara Santos

CNC-UC - Center for Neuroscience and Cell Biology, University of Coimbra,
 CIBB - Centre for Innovative Biomedicine and Biotechnology, University of Coimbra
 FFUC - Faculty of Pharmacy, University of Coimbra, Coimbra

Catarina Carvalhas-Almeida

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Cláudia Cavadas

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Mário Montenegro

Marionet Theatre Company & Centre for Interdisciplinary Studies
 CEIS20, University of Coimbra

Francisca Moreira

Marionet Theatre Company

Sara Varela Amaral

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Ana Teresa Viegas

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João Cardoso

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Ana Santos Carvalho

IIIUC - Institute of Interdisciplinary Research, University of Coimbra, Coimbra

Sleep or not to Sleep?

Sleep is fundamental for health and well-being, representing one-third of our lives. However, most people are not aware of the importance of having good sleep hygiene habits, and only a few sleep the recommended hours. This can result in severe consequences, not only short-term (irritability, poor memory, concentration problems, headaches, decreased immune defenses) but also long-term, with an increased predisposition to develop a series of diseases

(heart diseases, obesity, brain disorders, among others). One of the most common sleep disorders is obstructive sleep apnea (OSA) and its prevalence is continuously increasing due to obesity and aging, two common risk factors. OSA affects 1 billion people worldwide, nonetheless, 80–90 % of the OSA cases are still undiagnosed. In this context, it is critical to raise public awareness about OSA about the importance of its early diagnosis, in order to avoid the development of associated diseases and its social and economic impact. Recognizing the importance of Science Communication, our goal is to promote literacy in sleep and sleep disorders as OSA, raising awareness of the importance of adopting good sleep hygiene practices for a better quality of life.

In this context, in 2018, we initiated the project *To sleep or not to sleep?*, a joint project of Marionet, the Centre for Neuroscience and Cell Biology and the Portuguese Sleep Association. This project aimed at bringing together science and theater, using a methodology known as science-based theater, to raise awareness about sleep apnea, its causes and consequences. Scientific-theatrical performances are thus developed based on scientific research data obtained by the CNC in the context of OSA, and interviews with patients, pulmonologists and sleep technicians. Several scientific-theatrical performances have already been conducted within this project, as *Evento do Desconhecido* at the University of Coimbra on the European Researchers' Night (2018, 45 spectators), *A Máquina dos Sonhos* at Coimbra Conservatory of Music on the World Sleep Day (2019, 160 spectators) and at University of Coimbra (2020, 60 spectators), and *Morfeu e Apneia* at Convento São Francisco, Coimbra, on the World Sleep Day (2022, 281 spectators). Judging from the audience's feedback, this joint collaboration between science and theater has been an effective and engaging approach to share knowledge about sleep disorders. Overall, through this strategy, the *To Sleep or not to Sleep?* project has been contributing to increase public understanding of the importance of sleep and diagnosis of sleep disorders as OSA. By doing so, we are halting the progression of sleep disorders, preventing associated diseases, and contributing to healthier lives.

Food for thought: Performance for science communication in *Gastronomies* (2022) and *Auntie Covidia and the curious calamities of COVID-19* (2021)

This paper reflects on performance works created in 2021 and 2022, commissioned by the Department of Science and Innovation, Centre of Excellence in Food Security at the University of Pretoria (South Africa), to communicate scientific information. The 2021 project also had the UP UNICEF One Health Inter–Academy Partnership as commissioning partner. In specific, on the possibilities for shifting perspective or understanding by means of performance, and on lessons learnt.

The 2021 performance, *Auntie Covidia and the curious calamities of COVID-19*, aimed to communicate scientific information through performance in an attempt to warn against fake sanitisers and to debunk some of the myths around the COVID-19 vaccine. At the time of creating the 2021 performance, the South African government was in its initial stages of its phased roll-out of the COVID-19 vaccines. In the absence of a vaccine, hand hygiene was a key part of the response to COVID-19. A multitude of unapproved sanitisers flooded the formal and informal markets, and myths and misinformation about the COVID-19 vaccinations were rife.

Whereas the 2021 performance was centred more on communicating factual scientific information, the 2022 performance project, *Gastronomies*, considered the human dimensions that might impact responses to science information. The performances centred on the connections between social relationships and food consumption. The performance work consisted of four performance 'bites' that served as visual provocations to stimulate thought on the meanings of food in the context I describe.

I used varied levels of participatory and discursive engagement, as well as visio-sensory evocations/provocations to encourage dialogical engagement with the content of the performance. The performances centred on three key processes, namely 1). I argue that the interface between these processes, key, together with participatory engagement and visio-sensory evocations/provocations hold the possibility of opening up a 'third' space where 'fact' and personal perception coexist and collide to stimulate only critical and discursive

reflexivity, but also embodied reflexivity. These modes of reflexivity can facilitate layered understandings of the performance content that opens up possibilities for thinking and responding differently, and so re-evaluate held perceptions.

09.nov

Thursday

11:30 am
Anfiteatro III

Oral Presentation

Daniel Erice
Alioth arte&ciencia

Teatro para armar (A theater to assemble)

"I imagine an actor wandering around the museum, dressed as Sherlock Holmes and stopping in front of the fossil display case. Using his tools of deductive logic, he tells visitors the story of the living beings that were turned into stone millennia ago, just awaiting this moment... I imagine using theater to tell science."

When, back in 2006, I heard Jorge Wagensberg (then-director of the CosmoCaixa science museum), speak these words to a group of us working with him at the museum, it became clear to me that my idea of combining my two passions into one project was not crazy.

After graduating both in astrophysics and stage direction, Jorge Wagensberg's encouragement led me to create Teatro para armar, the first stable professional company of scientific theater in Spain, which will celebrate its 17th anniversary precisely during the conference, on November 11, 2023.

Since the premieres of the shows *Solo una cosa no hay* and *El tiempo por las nubes* in 2006, the multidisciplinary team of Teatro para armar has generated more than 15 projects, including shows for babies, families, and teenage audiences, guided tours of scientific exhibitions, projects of in situ scenic creation in archaeological sites, or science teacher training projects in theatrical techniques... We have even become part of the science popularization TV show *Órbita Laika* on Spanish television.

Teatro para armar has become a reference in the communication of science through theater in Spain and has taken part in performances and meetings in Italy, Portugal, the United Kingdom, and France. It has even been part of the advisory board of the European project PERFORM for the participatory engagement with scientific and technological research through performance, as well as the jury of the D'Ensayo scientific theater festival in Zaragoza.

Throughout all this time, we have developed our artistic practice facing economic crises and pandemics, we have become more and more engaged on the world of education, and we have created our particular decalogue of eleven points:

1. Teatro para armar leaves a mark.
2. Teatro para armar transforms and transforms you (me, her...)
3. You take Teatro para armar home with you.
4. Teatro para armar uses three dimensions and five senses.
5. Teatro para armar prefers questions to answers.
6. Teatro para armar allows you to make mistakes.
7. Teatro para armar creates poetic moments.
8. Teatro para armar helps you understand the other.
9. Teatro para armar is significant.
10. Teatro para armar needs to be assembled.
11. Teatro para armar goes beyond the canvas.

09.nov

Thursday

11:45 am
Anfiteatro III

Oral Presentation

Kailani Tavares Guimarães

Museu da Vida da Fiocruz

Carla Almeida

Museu da Vida da Fiocruz

**Theatre, Science and Humor:
A study from the play
"Paracelso, o Fenomenal"**

This oral proposal is a master thesis that analyses the construction of humor in the play *Paracelso, o fenomenal*, a play developed in 2019 at Museu da Vida/ Fiocruz. The play presents two characters showcasing scientific experiments and comic scenes using audience interaction.



In the literature review, an immersion in the following areas was sought: science communication; science museums; theater and science communication; humor, theater and science communication. From this last movement, a gap was located, to which this work intends to contribute. It was noted that the studies dedicated to the intersection of humor and science communication, creative processes and languages are poorly developed issues. In this research, from analyzing interviews, the play script and the play's photographs, we aim to excavate the construction of comedy. In order to support the analysis, a framework of studies in the field of comedy was used and an iconographic research was carried out seeking to relate elements of the play's language to comedy traditions. We note that *Paracelso, o fenomenal* finds its most elementary trait in the interaction with the public. Clowning and charlatanism are the languages chosen to manufacture the connection between actors and audience; between the public and scientific experiments.

Since scientific communication has a vocation for strengthening the ties between science and society, working with references of the popular tradition can point out relevant paths for the field. In a science museum like Museu da Vida, the comedy in the play *Paracelso, o fenomenal*, among other dimensions, presents itself as a way of building a space of belonging. Thus, it makes people feel that that space belongs to them and that they have the freedom to place themselves as subjects. More than a laugh, how can we connect?

09.nov

Thursday

12:00 am
Anfiteatro III

Oral Presentation

Abigail Bender

Stony Brook University

Ken Weitzman

Stony Brook University

Science on Stage: Transforming Scientific Research Through a Performance Lens

The field of science communication is expanding beyond scientific journals. General audiences are searching for accessible ways to understand scientific phenomena. Nothing is more accessible than storytelling. Theatre has incorporated scientific themes into stories for centuries. But it is often used as a backdrop or setting for the story to surround. Rarely do we see scripts that dive into active research produced by modern scientists.

Science on Stage: Transforming Scientific Research Through a Performance Lens is a continuation of a project spearheaded by professional playwright and Associate Professor at Stony Brook University, Ken Weitzman. The project consists of three playwrights partnered with three scientists at Stony Brook University. Through active collaboration, each playwright will create a short script following the research concept of the scientist they are partnered with. The scripts will then be performed in a staged reading on Stony Brook University Campus during late October 2023 followed by a talk back with playwrights and scientists.

The pairings will include professional playwrights whose work has been on Broadway and produced nationally and internationally. They will explore topics surrounding robotics and artificial intelligence, Antarctic wildlife and climate change, and social memory and cognition.

In the proposed oral presentation, I will discuss why theatre should explore stories surrounding active research by scientists, who are studying concepts at the forefront of our world, what it means for theatrical works to engage with active research, what it means for playwrights and scientists to partner and work together prior to the creation of a play, best practices in pursuing this work, a look into the process, including a summary of the Science on Stage scripts, audience impact after attending the reading, and finally possibilities for the future of this type of collaboration. Understanding these concepts will help theatre take steps to creating a solid foundation for themselves in the world of science communication.

09.nov

Thursday

12:15 am
Anfiteatro III

Oral Presentation

George N. Vlahakis
Hellenic Open University

Georgia Psychou
Hellenic Open University

**Theatre as a vehicle for science communication in Greece.
A review of the present situation and a proposal for the future**

Theatre has been part of Greek culture since ancient times, but this is naturally known. What is not so much known is that even in the ancient Greek drama, natural philosophy and technological innovations were present and scientific theories and ideas sometimes were criticized heavily by writers, like Aristophanes.



Coming to the present time, with this presentation we focus our interest on the use of the theatre as a vehicle for science communication in modern Greece. Although a small number compared to the total amount of plays, in recent years some well-known science-related theatrical plays were translated into Greek and were performed in Athenian stages with more or less success. Potentially a sign of the times, but still a number of questions arise. What was the aim of these performances? Were they just chosen with aesthetic and/or artistic criteria or did they also have an aim to communicate some scientific theories, like the theory of relativity and quantum mechanics to a wider audience? How can such occurrences be helped in communicating scientific topics and, to take it a step further, how, if at all possible, could the characteristics of the Greek audience be considered?

Through a project of the Science, Technology and Medicine Communication Laboratory of the Hellenic Open University we aim to discuss a number of ideas to transfer the "scientific" part of such performances from the margins to the centre. Through our presentation we would like not only to present these ideas to a community of experts, but also to receive a creative critique and feedback in order to make our view on the subject more coherent and effective. We hope to explore and exchange experiences with other countries in our collective effort to use theatre as a voice of science in the public sphere.

09.nov

Thursday

12:30 am
Anfiteatro III

Oral Presentation

Carla Almeida

Museu da Vida Fiocruz

Science-theatre at the Museum of Life Fiocruz: Studying and empowering the audience

Since Ancient Greece, the lives of scientists, their ethical and moral dilemmas, their discoveries and their impacts on society have inspired playwrights in various places and have emerged on the stages of theatres around the world. More recent is the interest of science communication in theatre, which has resulted in a proliferation of science-theatre productions in recent decades, performed in a great variety of formats and venues, for different audiences. However, the academic literature on the subject is still incipient, especially if we consider the Brazilian context. We have little systematized data on how and where these activities take place, who are the professionals involved, their motivations, who supports them and, above all, what impact they have on the public engagement with science.



As a privileged place for theatre practice and research, Museu da Vida Fiocruz (MVF), a science centre of a major health research institution located in Rio de Janeiro (Brazil), has invested efforts in building knowledge in the field. For more than 20 years, it has presented theatre plays on diverse scientific topics to its visitors. This audience consists mostly of middle and high school students, from disadvantaged and vulnerable regions of the city, who do not have science as a cultural capital nor museum visit or theatre going as cultural habits. To better understand the theatrical experience of these visitors and contribute to practice and academic literature on science–theatre within a science communication context, an interdisciplinary group of Brazilian practitioners and researchers has undertaken systematic research with MVF’s theatrical productions since 2016. In the meeting Theatre about Science, I will focus my presentation on the main findings of our studies, particularly on those related to audience reception. I intend to show (1) how theatre at this Brazilian science museum has been able to expand access to science and theatre to an audience that still has limited access to these assets, thus, expanding their cultural and science capital; (2) that the experience of the spectators in the MVF’s theatre is multifaceted, with a good balance among the aesthetic, cognitive and emotional audience responses to the performances; and (3) the ability of science–theatre to lead visitors to deeper reflection and greater engagement in debates on science related topics and to contribute to audience empowerment.

10.nov

Friday

11:30 am

Teatro

Paulo Quintela

Oral Presentation

Mário Montenegro

Marionet Theatre Company & Centre for Interdisciplinary Studies
CEIS20, University of Coimbra

**On the verge of modern science:
the emergence of the scientist on stage**

Through the analysis of a group of theatre plays from the 16th and 17th centuries, it is possible to glimpse a path of successive influences from // *Negromante* by Ludovico Ariosto, a play where a necromancer gets centre stage, to Thomas Shadwell’s *The Virtuoso*, where we can appreciate the first substantial representation of a scientist. In this presentation, I propose to walk part of this path, revealing traces of the emergence of modern science in contemporary theatre, focusing on dramatic representations of astrologers.

I’ll start this journey at the beginning of the 16th century, in Italy, in the initial period of development of the *Commedia Erudita*, tracing the emergence of a

new dramatic character, the necromancer, which signals a novel stock character in European theatre – the charlatan practitioner of the arts. We can identify the presence of this character in several plays of the period, with small variations, depending on the arts invoked for his deceptive ruses. About four decades after the premiere of Ariosto's *Il Negromante* (1528), where a necromancer gets, possibly for the first time, the protagonist role, Giambattista Della Porta's writes *Lo Astrologo*, also starring a practitioner of the arts with a broad knowledge of a number of disciplines, in this case with a shift from necromancy to other arts such as astrology, astronomy and alchemy.

Later, *Lo Astrologo* arrived in England through the adaptation that Thomas Tomkis made of Della Porta's play, *Albumazar*, expanding and deepening the "scientific" content of the charlatans' discourse. In this latter play, we can find references to Galileo's important astronomical observations among the topics on which the scoundrels talk. We are already at the dawn of modern science.

10.nov

Friday

11:45 am

Teatro

Paulo Quintela

Oral Presentation

José Maria Vieira Mendes

School of Arts and Humanities (University of Lisbon)
Centre for Theatre Studies (Lisbon)

'Modern Science' in Brecht's The Life of Galileo

Ideas of science have been changing with time. Bertolt Brecht's reading of the life of Galileo in his homonymous play (version 1956) is an episode in such history, revealing a particular Marxist and Brechtian idea of science intrinsically connected with the discussion of truth, reason and vision, and the tension between science and power in modern and contemporary society. In this presentation, I would like to focus on Galileo's arguments (and story) in Brecht's play, and the responses given by the characters who represent those who do not accept Galileo's truth, using Isabelle Stenger's idea of 'theory' (in *Power and Invention. Situating Science*).

I am convinced that one of the reasons why Brecht's Galileo wasn't able to convince his detractors of the 'truth' is because he is trying to assert a 'theory' immersed in a model of science that is 'inspired by a sterilized, rationalized version' (Stengers) that excludes what is considered to be outside of science and outcasts its so-called weakness and its practice of 'storytelling' (Stengers, but also Haraway). Such an idea of science trusts in a relationship of forces where Galileo can only lose.

In that sense, Galileo represents the prototype of a certain idea of modern science that privileges the 'scientific method', but at the same time realizes that empirical and technical evidence does not assure its triumph. If Brecht saw in Galileo's behavior the 'original sin of modern natural sciences', which led to science's 'indifference towards modes of production' weakening its 'social significance', we should reassess Brecht's character concerning contemporary reality.

In a time when science depends on a neoliberal system that almost exclusively favors utility and certainty in scientific research, I would like to read Brecht's play by looking at models, theory, reason, truth, empiricism, visuality and other strategies used by the character Galileo, and try to understand what we can learn from this play concerning the discourses science is subjected to in contemporary society.

10.nov

Friday

12:00 am

Teatro

Paulo Quintela

Oral Presentation

Ricky Coates

Matheatre

Sadie Bowman

Matheatre

Beyond the Boom

The science "demonstration show" is ubiquitous in the world's science centers. Theatrically-minded educators gather an audience for a science show based around spectacular demonstrations of chemistry, electricity, physics, and more. This "wow" factor works well to excite and inform spectators, but often, it lacks the emotional and intellectual punch of a play one can find in a traditional theatre. The characters are usually unimportant, comical, or "mad scientists," and the themes rarely extend beyond direct communication of the scientific theme. Conversely, theatrical plays rarely take the time to "wow" an audience with a live demonstration of science. There may be a "special effect" to make an audience gasp, but rarely does the play explain why that effect happened, leaving excitement for the actual science untapped. What can science demonstrators learn from theatre artists, and what can theatre artists learn from the excitement of demonstrations?

In their play *Nikola and the Mother of Invention*, Matheatre weaves together a dramatic narrative with the live science of a DC generator, an AC motor, a Tesla coil, and more. As the audience experiences the relationship between two inventors, a mother Djuka Tesla and her son Nikola, they also watch the characters "discover" science through live demonstrations. These working

scientific machines also advance the story and serve as metaphor for the characters' journeys. For example, Nikola uses the metaphor of an electric dynamo to plead with his mother to remove the commutator from his heart. In this manner, Matheatre tries to capitalize on the emotional component of musical theatre and the excitement of live electricity.

In this presentation, Matheatre speaks to the process of constructing the play and its effectiveness with audiences. They share the challenges and successes as well as what else could be possible. Together, let us pose the question "how might dramatic narrative enhance the "demonstration show" and vice-versa?"

10.nov

Friday

12:15 am

Teatro

Paulo Quintela

Oral Presentation

Rossella Spiga

INAF Istituto Nazionale di Astrofisica

Daniele Bartolini

Istituto Italiano di Cultura Toronto with DopoLavoro Teatrale

Daniele Galli

INAF Osservatorio Astrofisico di Arcetri

Antonella Gasperini

INAF Osservatorio Astrofisico di Arcetri

Marta Zannoner

Istituto Italiano di Cultura Toronto with DopoLavoro Teatrale

**Performing astrophysics:
The spectator as a voyager**



Watch the trailer

[THE SPECTATORS'
ODYSSEY o
dell'Inferno.](#)
[Chapter: coming
back di Daniele
Bartolini](#)

We would like to present the theatrical performance *Spectators' Odyssey- o dell'Inferno* as a conjunction between site specific performance and science communication.

The show was performed in Florence as part of *Summer nights in Arcetri 2022*, a series of astronomical-themed public events organized every year by the Astrophysical Observatory of Arcetri (conferences, astronomical observations, shows, concerts, etc) as a way to engage the public with science. The events usually take place at night in the so-called Theater of the Sky, an open-air amphitheater dedicated to accommodate the public to observe the sky and stars.

The *Spectators' Odyssey* is an adaptation of the Homeric *Odyssey* and Dante's *Inferno*, and it borrows the great sense of wonder of these poems with the audience becoming a modern Ulysses, a voyager. The project is an example of site-specific theater and audience-specific experience that invites participants to travel behind the scenes of a non theatrical space to make them the central character in the narrative experience.



For the Italian version of *Spectators' Odyssey*, the Astrophysical Observatory of Arcetri was selected as the perfect site to enrich the performance with an ideal journey through an ideal and unknown universe. The through-line of the storytelling was centered around exploration and pushing the boundaries of human knowledge, as well as science does. The connection of the theme of the stars, symbolizing the exit from the underworld, was the pivotal theme of the show.

The performance in fact included a ten minute lecture held inside the dome of the telescope by a scientist about exploration and astrophysics and, in the library, a conversation with the curator of the historical heritage of the Observatory on the themes of exile and estrangement. As a conclusion of the journey, spectators/voyagers were lying down on the floor to observe the sky.

The success of the project was that artists were pushed in the direction of science and scientists towards artistic performance, in order to overcome the boundary between communicating science and performing theater.

The Firenze edition of the show is directed by Daniele Bartolini and it is a co-production by the company Dopolavoro Teatrale (an international and award-winning company dedicated to multidisciplinary, innovative and experimental theatrical productions) with the support of National Arts Centre's National Creation Fund (Canada) and INAF Osservatorio Astrofisico di Arcetri.

10.nov

Friday

12:30 am

Teatro

Paulo Quintela

Oral Presentation

Kostas Gavroglu

Department of History and Philosophy of Science, University of Athens

**Galileo meets Pope Urban VIII:
A play concerning encounters
we know nothing about**

It is almost impossible to write a play that involves any kind of science if one is totally divorced from the historical milieu of the characters – after all, we know about these characters from the traces that are found in the archival material and from the work of historians of science who bring to life these characters.

But plays become intriguing when the authors attempt to go beyond what the archives say. The silence of the archives challenges the playwright to think about what "could have" taken place and "what would have happened if...", rather than bring to the stage what "really" happened. And, hence, what is a liability for historians becomes a blessing for playwrights. Historians, of course,

fill such gaps all the time, but they are constrained by the kind of questions they pose and the need for coherence in their arguments. A playwright's challenge is rather different: to bring forth character trends which are in tandem with what we already know about the protagonists of the play.

In such circumstances can theatre stay true to historical events without being didactic? Can a play become a "quasi-archival" document?

I shall try to discuss some of these issues as they are expressed in a little known meeting between Galileo and Pope Urban VIII in 1624.

10.nov

Friday

11:30 am
Anfiteatro III

Oral Presentation

Daniel Erice

Alioth arte&ciencia

Baroque science: A historical journey through the relationship between science and theatre

We live, as French philosopher Guy Debord put it, in a "society of the spectacle." Advertisers, artists, politicians, and even journalists must manage the laws of the theatrical if they want their messages to reach their intended recipients. In contrast, since the mid-twentieth century, basic science research has ceased to be spectacular. Discoveries and theories as important as the sequencing of the human genome, special relativity, or quantum physics are nothing more than a succession of chemical or mathematical formulas that are incomprehensible to the layperson.

However, this has not always been the case. Even before Galileo laid the foundations of modern science in the late sixteenth century, science and theater have often gone hand in hand. This is what has been called baroque science. The adjective "baroque" does not refer here to a historical era, but to the spectacular use of science. That is, the use of science as mere show, regardless of didactics, accuracy, rigor, or the theories that underlie the phenomenon. The use of the term baroque is justified by the theatrical conception that all arts (not just drama) had during the seventeenth and early eighteenth centuries.

Applying this theatricalizing notion to science, we obtain the concept of baroque science, which has existed in each and every moment of history. Thus, we call baroque science the use, in any historical period, of scientific concepts,

experiments, or phenomena with the sole aim of entertaining and impressing an audience with the spectacular nature of the representation.

We will thus take a historical journey through all the moments in which the scenic has been used for the dissemination of science: from medieval bestiaries, compendiums of beasts (real or imagined animals) that became very popular in the Middle Ages; to the Christmas Lectures initiated by Michael Faraday in the nineteenth century and which continue to amaze young viewers today every Christmas; including cabinets of curiosities, freak shows, penny gaffs, or dime museums...

10.nov

Friday

11:45 am
Anfiteatro III

Oral Presentation

Dimitar Uzunov

Arte Urbana Collectif

Science Fiction as a Powerful Tool to Communicate Science

Eight out of top ten of the highest grossing movies of all time belong to the science fiction (SF) and fantasy genres. They are extremely popular, and for a good reason: they are fun and offer magical experiences. But they can also help develop our imagination and allow us to ask the most powerful question of all: "What if?" Legendary SF author Arthur C. Clarke calls it "the only genuine conscience-expanding drug," while Yuval Harari, a historian and author, considers it the most important artistic genre today for it offers a way to explore the potential impact of new technologies and scientific developments on society and humanity's future.

Beyond its role in imagining potential futures and alternate realities, SF also has the power to communicate science to a wider audience. Several aspects of the genre determine this power:

SF has the ability to make complex scientific concepts accessible to a broader range of people. Through engaging characters and compelling narratives, SF can help to translate complex scientific theories and ideas into fascinating stories that capture people's imaginations. This can be particularly valuable in fields like physics, where abstract theories and mathematical equations can be difficult for the general public to understand.

SF art works could play a vital role in inspiring people to pursue careers in science and technology. By depicting scientists and engineers as heroes and



heroines who use their knowledge and skills to overcome seemingly insurmountable obstacles, SF can help to make science and technology seem exciting and relevant especially to the young audience.

Last but not least, SF can also shape public perceptions of science and technology. By depicting the positive and negative consequences of scientific and technological advancements, SF can help to foster critical thinking and informed debate about the direction of scientific research and development. By exploring the social and ethical implications of scientific advancements, SF can foster interdisciplinary dialogue between scientists, ethicists, philosophers, and other scholars. This can help to promote a more holistic understanding of science and its role in society and bridges the gap between science and humanities.

In the lecture will be discussed the following Science Fiction artworks:

Interstellar (film), *Gattaca* (film), *The Martian* (novel & film), *Mass Effect* (video game series), *Foundation* (novel & TV series), *Blade Runner* (film), *Don't Look Up* (film) and *The Long Way to the Stars* (theatre).

10.nov

Friday

12:00 am
Anfiteatro III

Oral Presentation

Iryna Kastylianchanka

Osaka University, Nakanoshima Art Center

Beyond a Knowledge of Ourselves toward an Understanding of Alter Ego or Androids in contemporary Japanese theatre

The interest in theatre stems from a curiosity about cultural diversity—through arts, drama, performance, film, literature, politics, and scholarship—and how this diversity reveals patterns in humans' relationships with the world. These patterns and relationships are both psychic and physical. However, the humanities are not enough today to talk about the world around us, not enough psychology and politics – something in which theater has always been strong. For centuries this art has dealt with human beings. Nevertheless, in the twenty-first century, the world is arranged in such a way that the artist can no longer be concerned only with people: humanity is spending more and more time on the Internet and is about to teach machines to think. This is why the relationship between man and robot, man and virtual environment, and man and the technological world is more and more on the theatrical agenda today. Thus, one of the actual tasks of theater in this case is to answer the question of how human perception changes when a certain reality is in front of him and at the

same time it is also “a virtual, or an inanimate object”.

Since 2008, Oriza Hirata has been working closely with robotics centers and personally with Hiroshi Ishiguro, the world's foremost expert in android development. Together they created several theater projects: the human android theater productions *Sayonara / Goodbye* (2010), *Three Sisters* (2012), and the human and robot theater production *I Am a Worker* (2008). These productions of the Seinandan Troupe were made as part of a joint project with Osaka University called *Performances with Robots*. Each of the performances features machines as one of the main characters.

This paper outlines and discusses how personal and cultural identities can be interpreted and used as tools in a specific theatrical context. Thus, the example of two performances (*Sayonara / Goodbye*, *Three Sisters*) reveals the desire of directors not only to strengthen the interaction between science and theatre but also to focus on human self-perception in the contemporary world.

10.nov

Friday

12:15 am
Anfiteatro III

Oral Presentation

Piotr Mirowski
Improbabilities

Boyd Branch
Coventry University

Kory Mathewson
Improbabilities

**Visual Theatrical Improvisation
Alongside Artificial Intelligence
Image Generators**

“Show, don’t tell” is a storytelling and science communication technique. Our theatre company, Improbabilities, employs it to demonstrate to audiences the formidable advances in generative imagery. In our show, improvisational actors co-create comedic narratives alongside artificial intelligence-based image generators. These performances touch equally upon the computer science behind text-to-image generators and upon the socio-technical aspects of AI-generated art.

Our show responds to urgent societal interrogations about the role of AI. Since 2015, image generation algorithms have followed seemingly exponential improvement from uncanny curiosity to highly detailed reproductions of reality. Generative Adversarial Networks (GANs), used for artistic style transfer or unconditional image generation, gave rise to text-guided image generators,

trained on billions of captioned images. Well-engineered Diffusion Networks now allow hyper-realistic image generation in seconds—in the style of specific visual artists. Accordingly, the impact of these algorithms went from the niche exploration of the glitch aesthetic by a handful of visual artists, to a standard image editing tool, but also to mainstream and highly commodified “artistic” readymades. The latter raise ethical concerns about plagiarism and misappropriation of artistic work that cannibalise creative economies.

We address those concerns by presenting alternative collaborative and co-creative applications of generative art, bringing humans directly into the loop of generation. In our shows, procedurally generated images are rendered as dynamic art pieces projected onto paper on a painter’s easel, letting the improvisers and audiences see the image as it is being generated, or revealing it only at the end of the scene as a punchline. We also investigate generating scene backgrounds and illustrations that respond to the scene’s dialogue or creatively prompt the actors’ creativity. These impermanent images are rendered solely to support live performance.

Showing image generation on screen through those different modalities allows us to intuitively communicate two aspects of the algorithm: the iterative generation from an initial noise image (by showing intermediary images produced by the diffusion algorithm), and the stochastic nature of the algorithm (by showing multiple realisations for the same text prompt).

We report on our process for devising and performing alongside generated imagery with a human-in-the-loop ethos, and situate it with recent experimentations of image generation-driven co-creation: the online Discord performance of Bureau of Multiversal Arbitration by company Aconite (players engaging in prompt battles) and Improvised TEDx talks by Mathewson and Faid (reacting to AI-generated presentation slides). We generalise our findings as best practices for live performance with artificial intelligence.

10.nov

Friday

12:30 am
Anfiteatro III

Oral Presentation**Antônio-José Gonzalez**

Ispa

Inês Peceguina

Operação Nariz Vermelho

Playback Theatre and scientific research

Playback Theatre is a form of improvisational theatre based on narratives from the audience. Since 2019 our team has been researching the impact of this kind of format on several well-being variables. This year (2023), we are collaborating with Red Nose Operation (Operação Nariz Vermelho), using Playback Theatre as a tool for scientific data collecting, in a project that uses the hospital clown's narratives as a base for their own improvement as persons and professionals and for better knowing their field of intervention with children and adults in hospitals. The presentations will present this path of exploration of the relationships between theatre and scientific research.

10.nov

Friday

12:45 am
Anfiteatro III

Oral Presentation**Leonardo Maciel Moreira**

Federal University of Rio de Janeiro

Meaning-making of university students in a theatre about science

The publicization of science and technology has achieved great importance in the dissemination of forms of information and knowledge that favor scientific literacy. Theatre is a recurrent language in the enhancement of scientific communication. In this research article, we analyze a scientific communication practice of the Ciênica Project, developed in a Brazilian university context, bringing together teaching, research, and university extension. Ciênica began in 2012 and currently develops its activities based on emancipatory education and on the Theatre of the Oppressed, focusing on the Forum Theatre technique, which enables more significant interaction with spectators, and favors a communication process closer to the model of public participation and horizontality. This investigation is guided by the question: What have the co-authors of a theatre of science learned? Thus, the objective of the research is to understand the meaning-making practices of university students participating in the process of assembling and presenting the theatrical play *!Agora [e-Now What?]*. This play is aimed at high school students and deals

with the theme of artificial intelligence. It was presented through a videoconferencing platform during the COVID-19 pandemic in 2021. There were 9 presentations of the play: an open rehearsal, the premiere, a season on four Fridays, two for graduate programs and one at a science fair. This investigation was developed in a qualitative perspective, case study type. The data were obtained after the performance period of the show, through semi-structured interviews with university students who were part of the cast, and analyzed using discursive textual analysis and the MAXQDA® software. We identified the understanding of scientific concepts, such as machine learning and big data. As for the relationships between science, technology and society, there was an understanding of AI influences in the world of work, such as the disappearance of jobs for human beings, the disappearance of some professions and the emergence of others. As for theatrical practice, there was recognition of the theater of the oppressed as a possible practice for students and for the elaboration of strategies against oppression. As for professional training, students explained the acquisition of skills that can help them in their future professions, such as teamwork, public speaking, empathy, expressing ideas and emotions, synthesizing thoughts and translating scientific language into theatrical language. Thus, we concluded that the students had different types of learning related to the dimensions: scientific concepts, relationships between science, technology and society, professional training, and theatrical practice.

10.nov

Friday

5:30 pm
Sala São Pedro

Oral Presentation

Thiago Martins Santos

University of Campinas

Jamiro S. Wanderley

University of Campinas

Adilson Ledubino

University of Campinas

Improving the Healthcare professional-patient relationship with drama

Healthcare professionals face huge challenges in their relationship with patients due to the high level of emotional stress and excessive work schedules, which can contribute to the development of Burnout (emotional exhaustion, decreased sense of personal accomplishment, and depersonalization). Thus, the degradation of this relationship may result in moral disengagement, where harmful actions become commonplace and eventually tolerated and accepted.

Drama has been shown to be a useful tool for improving the relationship between healthcare professionals and society, as it allows for the dramatization of situations experienced by patients and healthcare professionals. We hereby report the creation of a theatrical work entitled *Morte e Vida Passarinha*, which was the result of an elective course at the School of Medical Sciences at the University of Campinas that used a branch of Medical Education Empowered by Theater (MEET) methodology¹.

The course aims to encourage reflections on key themes for the formation of professional identity, to improve skills aimed at a good relationship between healthcare professionals and patients, as well as for self-knowledge. The creation of the play was based on the dialogue between narrative medicine and the collaborative process.

The students' autobiographical texts, which portrayed experiences related to health and illness in the context of care, were used to collect scenic material through story improvisation, focusing on the creation of characters and main actions. Throughout the assembly process, students were encouraged to think of a narrative line that would weave together the stories, bringing the experiences together in a single fable.

During the play, the facilitators inserted topics of interest in the scenes. In addition to moral disengagement and burnout, other topics addressed were: (1) functional decline in Alzheimer's dementia, (2) the derogatory use of humor, (3) the impact on the patient and family of the acute alteration of the state of consciousness (delirium), (4) aspects of bioethics at the end of life: difference between euthanasia and orthothanasia, living will, interruption of life support measures and human dignity.

The play was staged at the Sia Santa theater in Campinas, Brazil. It had musical support composed of guitar and voice, and the musical repertoire included, among others, Milton Nascimento, Tom Jobim, Beatles and Pink Floyd.

The authors suggest that drama can be a valuable tool for healthcare professionals to reflect on the moral dimensions of their work and to promote a good relationship with patients.

Oral Presentation

Nuno Filipe Veloso Dias
University of Coimbra

Graça Margarida Adónis Torres
Escola Superior de Educação de Coimbra, Instituto Politécnico de Coimbra

Ana Paula Monteiro Amaral
Escola Superior de Tecnologia da Saúde de Coimbra, Instituto Politécnico de Coimbra

Application of Theater in Health Sciences Teaching

Education for health humanization has revealed a growing trend. Several methodologies intend to respond to this social need in the health sector. Reflective practices and empathetic approaches have been highlighted in Health Sciences education, as active teaching methods for humanization. As in the *Teatro do Oprimido* by Augusto Boal, with a transforming nature through questioning, the present study, through the collaboration of the Theater and Education (TE) course with the Medical Imaging and Radiotherapy (MIR) course, produced a teaching methodology of simulation, which aims to apply theater to the provision of person-centered health care.

For that, the interventional method was designed, which simulated the provision of health care, by MIR students to TE students, who represented and improvised Standard Patients (PD). Three simulation sessions were carried out in which each TE participant received a briefing before the simulation (character and clinical context to be represented) and at the end of simulation received the respective feedback. The simulations corresponded to fictitious situations representing the reality of providing care with an emphasis on relational interaction.

A qualitative analysis was carried out, through semi-structured interviews, to relate and explore the relevance of the action with the teaching and learning of TE.

The results were indicative of improvements in the capacities of representation and improvisation of fictitious situations in health, adaptation of the character to the clinical context, consolidation of blocking mechanisms, confrontation and acquisition of new memory data and application of the trinomial "who?", "where?" "what?" to the construction of improvisation.

In this way, the application of TE in the simulation methodology allowed the development of skills for representation and improvisation of fictitious situations in health, in addition to providing realism and authenticity in the simulations. Thus, the theater proved to be a fundamental tool in the simulation methodology, with a view to teaching future health professionals, to promote humanization.

Matters of Life and Death: Uses of historical knowledge of medicine in the theatre play *All Too Human* (*Demasiado Humano*)

In this presentation I will discuss the writing process of my play *All Too Human* (*Demasiado Humano*), which incorporates historical knowledge of three important medical discoveries: the rabies vaccine, psychoanalysis, and the first immortalized human cell line (HeLa cells).

Medicine has provided much inspiration to writers within the Western theatrical tradition, but the representation of physicians, patients, and medical practices has significantly changed in the last decades. Distancing themselves from heroic narratives of progress and inventiveness common in the first half of the twentieth century, contemporary writers for the stage have instead focused on problematic aspects of the relationship between physicians and their patients, notably addressing the ethical dilemmas associated with the application of medical treatments of known or predictable consequences.

I wanted to construct a play that shifted the focus to the ethical conflicts linked to the process of medical discovery, and that problematised the traditional patient-physician relationship by emphasising the conditions that put physicians in a vulnerable position. While vulnerability is conspicuous in patients it also affects researchers, who are dependent on the existence of patients, funding, and results, often facing uncertainty in their careers until an acceptable treatment is produced. Of course, this shared vulnerability does not eliminate the power dynamics that almost always puts patients in a disadvantageous position, but I thought it provided an interesting and unusual way of looking at a medical discovery. Such discoveries could therefore be told as stories of vulnerability that united physicians and patients.

Having vulnerability at the core of the play also led me to pay more attention to the situation of the patients, who are at the centre of each part of my play. They find themselves in a moment of extreme vulnerability because they have all fallen into a life-threatening health situation they did not want nor anticipated. By delving into these extreme cases and placing them together, I try to go beyond the differences that separate them in order to construct a reflection on

what it means to be human. I will illustrate the dramatic potential of my approach with excerpts from the play.

A version of the text has been published in 2021 in a volume on the fifth edition of the New Dramaturgies Festival (Festival END – Encontros de Novas Dramaturgias).

10.nov

Friday

5:45 pm
Anfiteatro III

Oral Presentation

Niloufar Davari
Sapienza University of Rome

Expressive Body and Censorship in Iran. Limits and Overcomings in the Psychophysiological Process of the Performer

The idea for my research was initiated when I started deepening my studies in psychophysiology in the performing arts. Through my personal experience, I faced the following questions:

- How is it possible to see a brilliant performance from an Iranian performer on the stage under strict censorship conditions imposed by an authoritarian system?
- How can the performer control the body in such situations, overcoming the limits and obstacles, and transform the tensions into a strong expressive art form?
- How could this process be possible and if it would be possible for each artist?
- What are the limits and escapes towards a bodily performance in a context in which the body and words can be controlled and censored?

The phenomenon of censorship, specifically in the performing arts, is not widely dissected from the psychophysiological point of view in the work of actors, and indeed devoid of any judgment.

When certain rules and codes are placed to forbid some expressions, such as contact, use of some words, and expressing particular ideas, new conditions are defined for the performer and subsequently being present on the scene is not going to be the same as before. These limits would generate a new experience in his/her body which would also influence the body expression and the process of identification of the performer with the character.

How could a performer manage his/her body in such a context and at the same time how could one overcome the limits and manage the body in order to have an extraordinary performance while challenging the limits? How much these limits could affect the performance?

After the Islamic Revolution and consequently the foundation of the Islamic Republic regime in 1979, dance as a form of art was completely prohibited, and theatre was limited on its expressivity. The presence of the woman on stage is not prohibited, but limited in terms of expression. Severe codes were applied and are still in place: Physical contact between man and woman is prohibited on stage. The actress must dress appropriately in accordance with government regulations, wear a headscarf, and respect new regulations. As a result, alternative routes are taken thanks to the artistic intelligence of the directors, actors, and costume designers.

However, many continue to work in Iran: going on stage or directing training courses for the next generations of performers, legally or underground.

Naturally, such a context would provoke reactions. How does a performer organize the body in order to recover the freedom spaces?

Could such circumstances lead the performer to an auto-censorship consciously or unconsciously?

We try to deepen these aspects in relation to the personal experiences of some Iranian artists in the diaspora, who have been censored in various ways in the field of performing arts.

10.nov

Friday

6:00 pm
Anfiteatro III

Oral Presentation

Paulo Bio Toledo

Universidade Federal de Minas Gerais (UFMG)

**Theatre as a historiographical source
Comedy of Manners and forms of slave
society in 19th century Brazil**

This research examines how Brazilian sociability in the 19th century, shaped by slavery, appears in the *Comedy of Manners* of Martins Pena (1815 – 1848) written in the first half of that century. Even on the margins of the comic and light rhythm of Pena's texts, the slave system often inhabits his plays: domestic slaves, slave traders, freed black men and women, as well as music and



festivities marked by syncretism and, therefore, with a strong presence of African culture. This marginal, yet intense presence provides clues to the "social rhythms" of the country at that time. In addition, Pena's comedic theatrical text also projects a performance, a way of embodying those words and interacting with the audience and society of the time. In this sense, the plays can be seen as a specific type of historical document. The "theater-document", understood here as both the literary text and the fragments of the spectacle it projects, is a material that has the potential to expand methodologies in historiographical studies on slavery and shed light on new aspects of the debate. While Martins Pena's comedies document certain scenes of everyday slave life, they also project how these issues were transported to the stage and contain indications of how the representation was received in society at the time. This visualization of the scene from the reading of the text is a difficult and risky task: there is no material that allows for an exact reconstruction of the performance, and it requires a degree of imaginative speculation – a procedure that is viewed, correctly, with suspicion by the classical tradition of historiography. However, it is argued here that a detailed attention to the aesthetic dynamics of the playwright's works, observed together with other more traditional historiographical sources (such as newspaper chronicles, traveller accounts, and artist descriptions), allows for the reintroduction of a type of material that sheds new light on the historical dynamics imbued by slavery. Artistic works are not a direct reflection of their time. They also foreshadow sense, depart from, and critique the time of which they are a part. As a historiographical source, Pena's plays can suggest complex images of the social "rhythms" that shape that time, as well as images of how the era saw and judged itself; of the social space that the representation of slaves could occupy in theatres, and how artistic sensitivity elaborated the historical dilemmas of slavery in the chaotic and disorderly environment of Brazilian stages in the 19th century. In Martins Pena's comedies, it is possible to notice, for example, the dialectical space that slavery occupied in the country's imagination: the astonishing coexistence of kindness and violence; or the apparent social integration and systematic suppression of the slave, reduced to a disposable object. Therefore, this research seeks to move interdisciplinarily between theatrical studies and the important historiographical tradition of slavery in Brazil, in order to contribute to the latter and reflect on how the slave institution participated in Brazilian theater of the period, and how it was shaped by it. All of Martins Pena's comedic works – which are few – are being studied in the development of this research. The breadth of the subject allows for a greater sampling of systematic elements in the texts, which in turn allows for the expansion of the exercise of reconstructing the spectacles and their scenic mechanisms.

Modernist Theatre and Science: Two Plays

Two writers are often credited with instigating 'modern drama': George Buchner, whose fragment *Woyzeck* (left unfinished at the author's death in 1837) was finally published in the late 1870s, and Emile Zola, whose manifesto on *Naturalism in the Theatre* appeared in 1878. These works almost simultaneously ushered modern ideas about science, scientific observation, and experimentation into the theatre and made conscious engagement with science an intrinsic part of a break with the theatrical past. Thus began an explicit, conscious interaction between science and the modern stage, from Strindberg and Ibsen's works through those of Bernard Shaw, Leonid Andreyev, Maxim Gorky, Elizabeth Robins, Eugene Brieux, Harley Granville Barker, Karel Capek, Tawfiq al-Hakim, James Ene Henshaw, and Mary Burrill through the transatlantic Modernist theatre of Glaspell and Treadwell, the biomechanics of Meyerhold, the Federal Theatre Project's science-inflected productions, and Brecht's changing depiction of science and scientists. In addition, there is another meaning of 'science in the theatre,' which is the hidden, backstage element—the often unacknowledged roles played by science and technology in the staging of modernist theatre, particularly lighting and scenography, led by Adolphe Appia, Jean Rosenthal, Shirley Prendergast, and others.

These names and topics describe the wider context for the paper that I propose to give, in which I will focus on Capek and Henshaw, particularly their plays exploring an emergent counter-scientific tendency: *RUR* (1923) and *This is Our Chance* (1956) respectively. The comparison will allow me to explore this aspect of the modernist relationship to science as it manifests itself on stage, and to situate these works in the context outlined above—as pioneering works for the stage that rarely make it into the grand narratives of 'Modernism,' even the so-called 'New Modernisms' with their wider geographical spread. The paper concludes by pointing to this larger problem of the persistent neglect of theatre within the historiography of Modernism, and to the engagement with science as a possible route to rehabilitation.

'A Strange and Secret Thing': Staging Heredity in the Harlem Renaissance

W.E.B. Du Bois is best known for his pioneering work on race from the beginning of the twentieth century, especially in the literary work *The Souls of Black Folk* (1903); however, his original dramatic works remain almost completely critically neglected. In this paper, I turn to these original, unpublished works, which have been acknowledged but never closely analysed. As Geoffrey Lokke has recently noted, these works "[total] some 1900 pages. An in-depth study of these documents would reveal something of Du Bois's creative process as he developed the plays over the years." This paper argues that a close reading of these plays reveals Du Bois's engagement with modern drama, especially as he turns to evolutionary themes such as heredity and race.

The paper uses archival materials to focus on the strategies by which Du Bois sought to make the invisible, microscopic processes of biological heredity visible in *Christ on the Andes* (c. 1907) and *The All-Mother* (c. 1931). I trace his interest in August Weismann's theory of germplasm, as well as show the ways in which his interest in staging biological topics which intersected with ideas of agency and environment links him to both the oeuvres of playwrights such as George Bernard Shaw, W.B. Yeats and Samuel Beckett; as well as critically-neglected playwrights of the Harlem Renaissance such as Willis Richardson, Marita Bonner and Mercedes Gilbert.

Despite their explicit biological interests, Du Bois's plays remain critically neglected and do not feature in accounts of modernist theatre. Similarly, the plays of the Harlem Renaissance have long been viewed as separate from the developing concerns of twentieth-century modern drama. This paper uses the framework of theatre and science to correct these oversights; and in doing so recovers the significant engagement with key moments of microscopic biological life by historically-marginalized figures.

But Where Is This Farce To End? Science Performance In Elizabeth Inchbald's play "Animal Magnetism"

I offer a reading of Elizabeth Inchbald's satirical play *Animal Magnetism* (1788) which explores its engagement with science and theatrical form. By the late eighteenth-century electricity was both a valuable tool in scientific practice and a very popular form of entertainment. It remained a largely inexplicable phenomenon but experiments with electricity and magnets led to their deployment for medical purposes, bringing them into conflict with traditional medical practitioners and their professional bodies. At the same time medical fraud and quackery were rife and matters of concern for both patients and doctors. Inchbald brings these matters into the public sphere with a farce about a contested form of medical treatment: the scientific vogue for magnetism. This was a branch of electrical medicine which became fashionable in France in the 1780s and rapidly spread to other European countries including England. It was immediately controversial, considered by the medical establishment to be a form of quackery practised by charlatans, but whose nature and properties were of great interest to natural philosophers. Animal magnetism was the brainchild of Franz Anton Mesmer, and the dramatic and theatrical demonstrations of his new therapy quickly became a target for satirists who ridiculed it with parodies, caricatures and plays. Inchbald was the first playwright to bring a satirical comedy about magnetism to the London stage.

I argue that Inchbald's engagement with science through theatrical performance both enables a critique of contested scientific practices and explores contemporary attitudes to the scientific and medical professions. The bumbling antics of quack doctors in ridiculous predicaments had long been a staple fare in European theatrical farce, but Inchbald repackages these enduring images for a modern age. Her commercially successful play engages directly with contemporary issues, builds on a traditional and well-loved theatrical format and brings an ethical dimension to an entertaining farce, written to appeal to a wide audience. Consumers of medical products based on various branches of electrical science were faced with a plethora of new discoveries, such as Elisha Perkins' *Metallic Tractors* and James Graham's *Celestial Bed*, and limited ways of judging their value. I suggest that Inchbald uses a satire on magnetism to air wider concerns about what doctors and natural philosophers were doing, and what people were to make of the new and alarming scientific discoveries that were becoming part of medical practice.

Theatre and science in Brazil: Origins and interactions on the 19th century

The 19th century is a crucial time to understand what Brazil is today and what Brazilians are. Far beyond the mere separation between the colony and the Portuguese metropolis, the so-called "Independence of Brazil", which took place in 1822, is inserted in a period of intense theatrical and scientific creation. In dramaturgy, Martins Pena (1815–1838) and França Júnior (1838–1890), for example, portrayed, with irony and criticism, social ills, conceiving a new artistic genre.

At the same time, the foundation of the Botanical Garden of Rio de Janeiro, in 1808, was fundamental for the advancement of Science. Recognized worldwide today, it has become an important research center in the field of Botanical Biology and Biodiversity conservation. The royal press, active from 1810, and the inauguration of the first library on Brazilian soil, in 1811, now the National Library, were crucial for the production of knowledge.

It was also in the 19th century that Brazil was visited by the then young naturalist Charles Darwin (1809–1882). His stay was marked by the research of the vast Brazilian fauna and flora, but also by the indignation in relation to the slave practices still in force in the country, in 1832, when he was here. The impact of Darwin's passage through Brazil motivated relevant studies on tropical nature.

In this environment of science growth and scientific dissemination, Martins Pena is one of the first authors to portray the process of urbanization in the 19th century. His work provides analysis of human behavior. Founder of the genre "comedy of manners" explores interpersonal and professional relationships and the violation of rules of social conduct. The historiographic richness of França Junior, in turn, can be verified in writings full of criticism of politics and imperial fads.

The work of both has documentary value of a society in scientific and theatrical ascension, and, at the same time, so unequal in multiple areas. The object of Pena and Júnior is, therefore, Social Science. Going back to the 19th century, in dialogue with the present time, can bring to light explanations for the formation of Brazilian identity, and why so many Brazils, Sciences and Theaters coexist.

Developed independently, the historical and critical survey has been carried out since the beginning of 2023, and aims to establish connections between Theater and Science, based on the development of scientific dissemination in Brazil.

Oral Presentation

Vânia Rodrigues

Centre for Interdisciplinary Research
CEIS20, University of Coimbra

Fernando Matos Oliveira

Centre for Interdisciplinary Research
CEIS20, University of Coimbra

To green or not to green: Theatre management and the ecological imperative

As climate change is increasingly up on the agendas, and the links between the arts and culture and environmental policy become more evident, artists are increasingly embedding ecological issues within their creative practice, which is progressively being studied by critics and scholars. Ecology is said to have “lit a greening fire across disciplines” (May, 2005:84), paving the way for the emergence and ongoing consolidation of studies and discourses around ecodramaturgy (May, 2010), eco-directing (Cless, 2012), ecocriticism (Chaudhuri, 1994), eco-devices (Oliveira, 2017), franchised or recycled theatre (Medenica, 2021). These developments are evident in numerous thematic or ‘aesthetic/eco-poetic’ approaches (Sermon, 2017) in a context where the arts have mostly been challenged to take on the role of raising awareness around the severity of the climate crisis, given that their ability to tell stories, to offer narratives which “make complex relationships between entangled (eco)systems understandable” (Skolczyk, 2021:6) is increasingly confirmed by behavioural scientists (Banerjee and Shreedhar, 2021). However, this growing body of literature is mainly focused on the theatrical form itself (paying attention to the different expressions and interpretative possibilities of an ecologically self-aware theatre) and seems to afford less attention to arts’ specific modes of production. As such, the ‘pragmatic’ aspects of artistic production in an eco-responsible paradigm remain underexplored in the field’s dedicated research.

This paper explores the transformation that may arise from considering ecological urgency materially rather than only metaphorically (May, 2005), thereby discussing how this perceived global scientific and social challenge is being apprehended and translated into the performing arts’ – and particularly theatre’s – production and management practices. In addition to building on our previous research which has re-examined the specific contribution of performing arts producers and managers (Rodrigues, 2022) as intermediaries between the spheres of art, policy, economy and wider societal concerns, we will also base our analysis in two recent research endeavours. Firstly, we will explore the preliminary results of a nation-wide qualitative inquiry among

performing arts practitioners based in Portugal, delving into more than 100 written contributions from publicly funded theatre companies and artistic institutions. Secondly, we will discuss the outcomes of a dedicated workshop conducted with the artistic and managerial board of a Portuguese National Theatre. The combination of these efforts offers us a practice-informed basis for understanding to what extent and in which ways is the ecological urgency influencing theatre (green) modes of production.

11.nov

Saturday

11:45 am
Anfiteatro III

Oral Presentation

Mário Montenegro

Marionet Theatre Company & Centre for Interdisciplinary Studies
CEIS20, University of Coimbra

Francisca Moreira

Marionet Theatre Company

Ana Raquel Calapez

MARE, ARNET, Dept. Life Sciences, University of Coimbra

Sónia S. Q. Serra

MARE, ARNET, Dept. Life Sciences, University of Coimbra

Salomé Almeida

GeoBioTec, Dept. Biology, University of Aveiro

Maria João Feio

MARE, ARNET, Dept. Life Sciences, University of Coimbra

Theatre to promote public awareness for the rehabilitation of urban streams

One of the keys for the rehabilitation or restoration of urban freshwater ecosystems is to promote citizen awareness and their engagement in nature preservation. The environmental educational project CresceRio was created in 2018 in the city of Coimbra, Portugal, assuming the urgency to promote the preservation and rehabilitation of urban streams, to reconnect the population of the city with nature, and the importance of children as present and future agents of transformation of societies.

During their four primary school years, a group of 23 children (6–10 years old) participated in field trips and laboratory activities aiming to show them 1) the unknown urban stream ecosystems near their schools and homes, their biodiversity (e.g., benthic invertebrates, algae, amphibians, birds, riparian vegetation, macrophytes), and services; and 2) the problems of these streams resulting from anthropogenic pressures, and 3) plan solutions. One of the outcomes of the project is a theatre play, co-created with the children, about river ecosystems and their main threats and the experience they had during those activities with the river ecologists. The main aim of the play is to use it as a vehicle for the children to share the knowledge they gained about the river

close to their homes, with the other children, their relatives, their community, and eventually influence stakeholders to promote urban rivers rehabilitation. Here, we present the project, discuss the theatrical processes used to build the play together with the children, and the impact the play had, both on the children who participated and on the audience.

11.nov
Saturday

12:00 am
Anfiteatro III

Oral Presentation

Alice Barbaza
École des Hautes Études en Sciences Sociales

Scientists and lecture–performance: Towards an ecology of knowledge

This proposition addresses two questions : Can theater transform the way scientists perform their research? Where is the boundary (if any) between science communication and performing communication?

Lecture–performance, once confined to the artistic field, aiming to question its institutions, and addressing an «educational turn» and the production of knowledge in the arts, has now become widespread. Scientists take the stage. In the public eye, these performances are often compared, or taken for, much more globally accessible, free to view, formats, such as Ted Talks or YouTube vlogs, and could be misunderstood as an entertaining way to disseminate knowledge. Why do scientists and researchers take the risk to stage themselves in this alternative context, where scientific discourse is subjected to severe scrutiny?

Theater establishes a shared time–space between performers and audience members.

Beyond communication, we see that theatre offers itself as a vector for a transformational experience that intertwines emotional and empirical knowledge, and offers a reflective space for knowledge production.

We argue that in lecture–performances, the performer’s present expert opinion while simultaneously troubling their position as the unique authority on knowledge. This troubling is necessary in order to allow the theatre to become a laboratory in and of itself, where knowledge is actively generated with and acutely for the participants. The communication thus goes beyond a simple dissemination of scientific facts, communicating the very principles of scientific inquiry.

To illustrate these points, we draw on two series of lecture-performances : *La Trilogie terrestre*, by Bruno Latour and Frédérique Aït-Touati, and *l'Atlas de l'Anthropocène*, by Frédéric Ferrer. In the midst of the ecological crisis, they employ techniques in order to blur the disciplinary boundaries of typical science dissemination. They consider the role of the scientist, and the effect of repetition and reenactments in its embodiment. This embodied approach addresses the limits between theory and practice, and leads us to reflect on the role of fiction in the ecology of knowledge.

11.nov
Saturday

12:15 am
Anfiteatro III

Oral Presentation

April Thant Aung
Nanyang Technological University Singapore

**What are Designer Babies?
A Blurring of Social Engineering
and Genetic Engineering on Stage
in Singapore**

To date, studies on theatrical representations of evolutionary theory and reproductive and genetic science have primarily focused on Western plays such as Caryl Churchill's *A Number* (2002), Eugene O'Neill's *Strange Interlude* (1928) and Susan Glaspell's *The Verge* (2021).

I seek to address this gap in the scholarship by investigating the theatrical representations of eugenics and biotechnologically assisted reproductions in three Singaporean plays: Stella Kon's *Z for Zygote* (1971) and *To Hatch A Swan* and Haresh Sharma's *Future Perfect* (2012).

Sharm's play was commissioned by the National University Singapore Centre for Biomedical Ethics to raise awareness in youth on ethical issues pertaining to human enhancement. In this paper, I argue that the plays' reproductive dystopia prompts a reconceptualization of 'designer babies' that involves a shift from the understanding of 'designer babies' as an alteration of genetic makeup using biotechnologies. Instead, I posit that 'designer babies' have been in effect in varying degrees through homogamy, transactional marriages and eugenics-based policies and programs as depicted in the plays. In doing so, I argue that 'designer babies' are neither a future reality nor a theoretical possibility; 'designer babies' have been arguably in force since before the twentieth century. A reimagination of 'designer babies' in this manner raises thought-provoking questions about reproductive and genetic science as ostensibly scientific endeavours and operations, and reveals instead the dialectical relationship between science and culture.

The theatrical elements of the plays facilitate the reimagination of 'designer babies' and the examination of the synergistic relationship between science and culture. In particular, the dystopian subject matter of the plays is made commonplace through twentieth century realist set designs in Kon's melodramatic plays and the staging of Sharma's play in an auditorium with minimalist set design. Additionally, Sharma's play features a Greek chorus that draws attention to ethical issues concerning the practices of human enhancement and prompts reflection in the audience on the purpose of human enhancement.



Workshops

09.nov

Thursday

2:30 pm
Anfiteatro III

Workshop

Faron Moller
Swansea University

Geinor Styles
Theatr na NÓg

Luke Clement
Technocamps

Debbie Webster
Oystermouth Primary School

Theatre Meets STEM Outreach – A Marriage Made in South Wales

Theatr na nÓg (theatr-nanog.co.uk) is a theatre company that has been creating original relevant productions in South Wales for over 40 years. Technocamps (technocamps.com) is a university-based STEM outreach programme that has been providing workshops for schools throughout Wales for over 20 years. Both are multi-award-winning organisations in their own disciplines. Over the past six years, Theatr na nÓg and Technocamps have been working together on a number of original productions aimed at young people. These are created, produced and staged by Theatr na nÓg, and supported by Technocamps with bespoke pre-viewing and post-viewing classroom workshops. The productions align with the newly-introduced National Curriculum for Wales which places an emphasis on learning and experience relevant to the local environment. The synergy that has been created by this collaboration has resulted in a much-enhanced offering which has received great praise from schools.

The aim of this workshop is to explore the value of such productions, and the value of developing and delivering bespoke workshops which explore the science related to the production, and then to provide guidance and encouragement to those who might look to replicate our success elsewhere.

The productions which we explore in the workshop are as follows.



• *Eye of the Storm* explores the need to encourage girls to study STEM subjects. This musical, with songs written by Grammy Award Winning songwriter Amy Wadge, highlights the plight of a young carer, living on the edge of society in a trailer in the Welsh Valleys, who has an ambition to study physics, but struggles against the barriers imposed by her social status and the gender biases she experiences in her physics classroom. The associated workshops explore physics and the computations underpinning the study of physical phenomena.

• *The Butterfly Hunter* tells the incredible tale of Alfred Russel Wallace, the Welsh-born co-discoverer of the theory of evolution, with associated workshops exploring genetics and machine learning, with the class developing a machine learning tool to distinguish between butterflies and dragonflies.

• *The Arandora Star* explores the treatment of Italian immigrants in South Wales during the Second World War who faced forced transport to Canadian internment camps aboard the eponymous ship. The associated workshops explore human geography, migration, and the data science behind population statistics.

• *The Trial of Elgin Jones* invites young audience members to be part of an immersive and interactive theatre production where they act as the jury in a trial in 1898 that is deciding the fate of a 14-year-old boy charged with poaching, theft and murder on a local estate. The associated workshops explore explainable AI and its increasing use in legal, medical, and commercial decision-making.

09.nov

Thursday

2:30 pm

Rómulo - Centro
de Ciência da
Universidade de
Coimbra

Workshop

Nigel Townsend

Theatre of Debate

Judith Johnson

Theatre of Debate and Central School of Speech and Drama

Theatre of Debate Generator Workshop

Theatre of Debate – making the complex and challenging, meaningful and engaging

'How does theatre engage with public debates about science and scientific developments?'

Advances in science, medicine and technology raise social and ethical issues for us all that are complex and multi-layered.



We work with leading scientists and researchers, policy makers and experts, writers and actors to produce creative work including theatre and debate, live and filmed, that engages young people and adults in ways that both entertains, provokes serious thought and offers informed debate.

Our projects begin with a generator workshop, bringing together academics, researchers, theatre practitioners, other artists and members of the target audience. The primary purpose of the workshop is to start a dialogue between the researchers, theatre practitioners and other artists that will result in a play inspired by the conversations we start today.

Our Proposal:

We will create a specially designed interactive workshop led by the Artistic Director Nigel Townsend and Playwright Judith Johnson, who has written several plays for TOD including *People are Messy*, which was screened at the 2021 conference.

Theme:

A theme will be chosen for the workshop for example:

- AI – ethical considerations around Connected Digital technologies with a focus on Machine Learning (ML) and Artificial Intelligence.
- Gene editing
- The first evidence of intelligible life in space – how can we prepare ourselves scientifically, socially and politically – who decides what we do next?"

Whichever research theme is chosen, the objective remains the same: to stimulate the development of story synopses/outlines that aims to engage audiences in informed debate around the area of research in question through live theatre.

Judith and Nigel will lead the participants through a series of interactive activities in pairs, in groups of four, and as the whole group.

These activities will give the participants an opportunity to explore what they know, feel and think about the ethical issues arising from the area of research. Working in groups, the participants will work on a creative response to the questions raised by producing a short performance.

10.nov

Friday

2:30 pm

Teatro

Paulo Quintela

Workshop**Margarida Pedroso de Lima**

Faculdade de Psicologia e de Ciências da Educação da UC

Francisco Forte

Grupo de Expressão Dramática InterDito Faculdade de Psicologia e de Ciências da Educação da UC

Miriam Bernardino

Grupo de Expressão Dramática InterDito Faculdade de Psicologia e de Ciências da Educação da UC

From action to transformation: The Oppressed Theatre as a tool for reflection on science

Through Oppressed Theatre techniques and exercises, the Group of Dramatic Expression, "InterDito", has made numerous interventions throughout its existence, more than 14 years, in order to give visibility and legitimacy to social problems, towards the resolution of conflicts and the promotion of mental health.

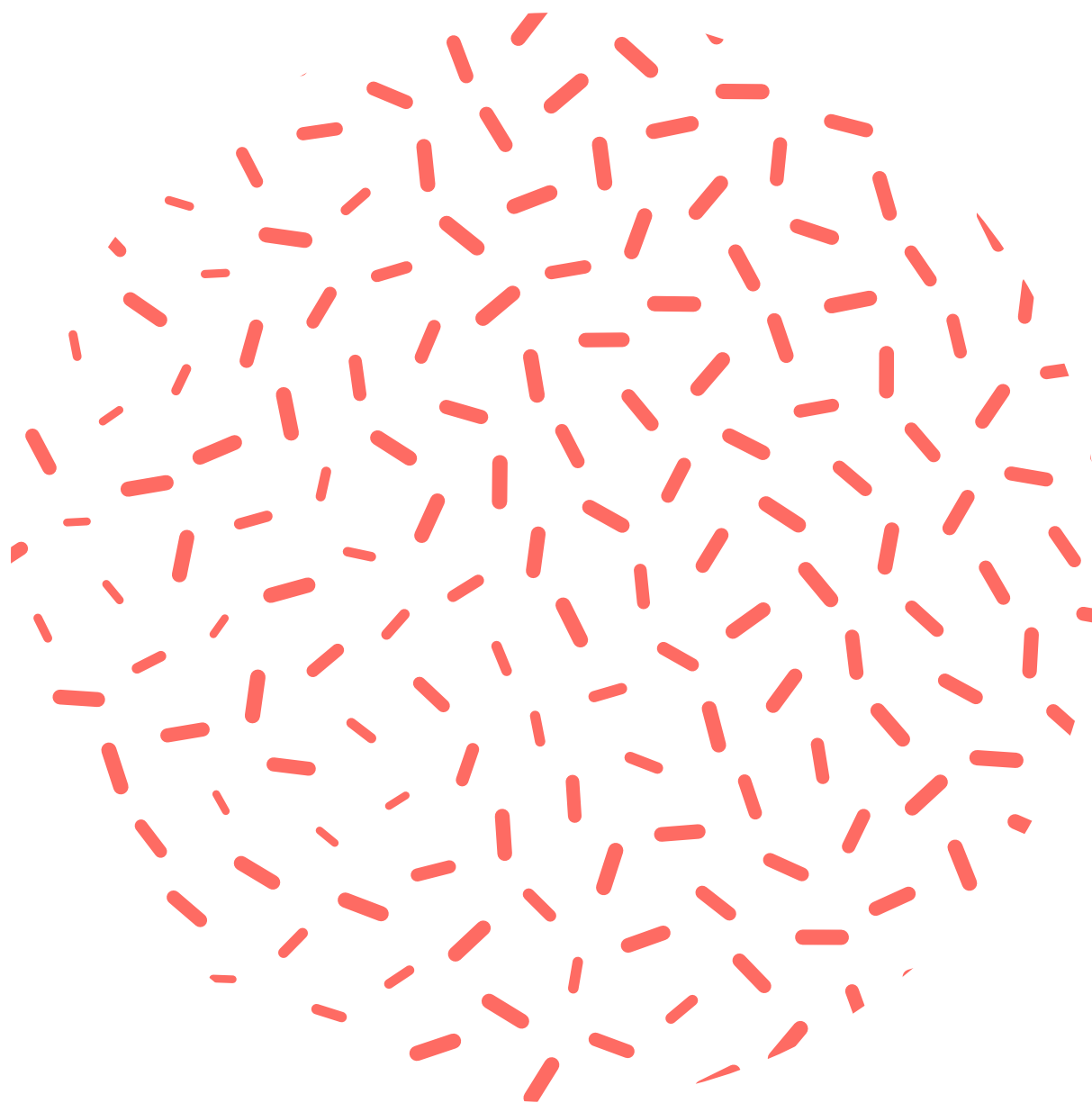
The Oppressed Theatre is an artistic method created by Augusto Boal in Brazil in the late 1970s, in the context of censorship and military dictatorship (social oppression). The goal of this line of theatre is to use theatre as a tool for political, social, ethical, and aesthetic work for social transformation. There is a huge diversity of techniques and their applications for different contexts and needs (Boal, 2019).

According to Boal (2019), Oppressed Theatre is dedicated to the struggles of the oppressed, which always implies a power relationship between the oppressed and the oppressor (protagonist and antagonist). In this sense, for the author "everything is theatre" since for each environment and situation we play different roles. It proposes the elimination of obstacles that may prevent people from resolving their conflicts. It is a methodology that seeks social transformation starting from a protagonism (getting out of the role of the oppressed).

This workshop has as its experiential proposal the collective construction of scenes based on the experience of the participants (researchers and students) regarding the difficulties encountered in the academic context. The minimum number of participants is 8 and the maximum is 20.

In this sense, group exercises/dynamics based on the Oppressed Theatre will be proposed, in the direction of concretizing the questions and conflicts experienced by the participants (researchers and students) in the academic context, with the objective of dialoguing and seeking solutions for such shared (dramatized) questions and conflicts.

The Group of Dramatic Expression, "InterDito", of the Faculty of Psychology and Education Sciences of the University of Coimbra (FPCE-UC), is a collective of people, mainly students, researchers, and professionals of Human and Social Sciences that aims at the personal development of its participants and the social transformation, through active participation in actions directed to social causes, namely human rights, environment, mental health, and others.



Discussion Panel

11.nov

Saturday

2:30 pm

Teatro

Paulo Quintela

Discussion Panel

Joana Ricarte

University of Coimbra Institute for Legal Research (UCILeR)
Centre for Interdisciplinary Studies (CEIS20) of the University of Coimbra
Faculty of Humanity and Arts (FLUC), University of Coimbra

Vanessa Nunes

Centre for Interdisciplinary Studies (CEIS20) of the University of Coimbra
Faculty of Psychology and Educational Sciences (FPCEUC), University of Coimbra

Clara Serrano

Centre for Interdisciplinary Studies (CEIS20) of the University of Coimbra
Faculty of Humanity and Arts (FLUC), University of Coimbra

Sérgio Neto

Centre for Interdisciplinary Studies (CEIS20) of the University of Coimbra
Faculty of Arts and Humanities (FLUP), University of Porto

The potential of participatory theater to foster inclusive values, policies, and identities: An interdisciplinary approach

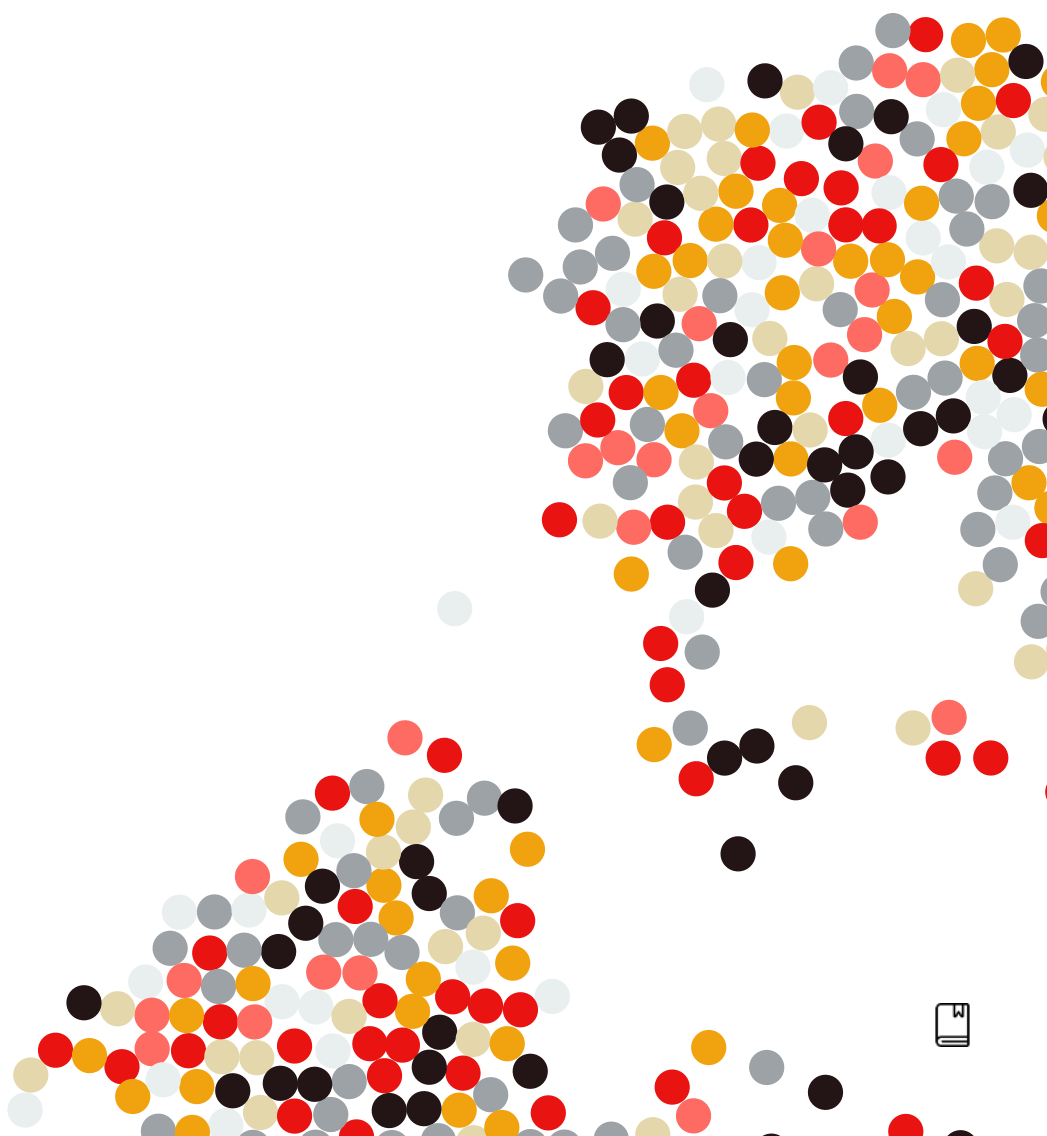
This panel discusses the potential of theater for promoting social and political transformation. In the context of the current rise of extremism, radicalization and exclusionary politics worldwide, being Portugal no exception, it is essential to explore creative and innovative possibilities to positively transform narratives and promote social dialogue.

Due to the co-constitutive character of participatory theater, it is considered an exquisite methodology to address the drivers of extremism in an active way, inspired by a research-action rationale. Drawing from an interdisciplinary approach comprising Political Science, History, Philosophy, Social Service, Psychology, Communication and Performance Studies, speakers will discuss the multifaceted potential of participatory theater methodologies as a tool for promoting cultural, political, and social mediation. The panel explores how participatory theater, designed based on scientific evidence to address the drivers and narratives of extremism, can be constructed as a tool for social

intervention, analyzing its potential to foster inclusive values, policies and identities. The panelists will draw from the data generated by the research project REPROGRAM-EU: Fostering Inclusive Values, Policies, and Identities through Participatory Cultural Programming in the European Union, which is aimed to analyze how young European citizens relate with the EU and to test a model for using participatory methodologies such as Forum Theater, Playback Theater and the Theater of the Oppressed to promote social and political dialogue.

The discussion will include, but will not be limited, to the following topics:

- The role of imagination and history telling for reconciliation: a philosophical perspective on performance;
- Theater as an artistic message for science communication: counteracting extremism through participatory theater methodologies;
- Reimagining social intervention: theater as a pathway to empowerment and advocacy for individuals in situations of social and cultural vulnerability;
- Overcoming communicative blockages through theater: forum-theater role playing as a technique to foster empathy and social change.



Lecture Performances

10.nov

Friday

2:30 pm
Anfiteatro III

Lecture Performances

David Quang Pham

Working Title Playwrights, Atlanta

ELLIPSES

A Musical 13.8 Billion Years in the Making

featuring Teresa Aguiar and Bernardo Alves

It takes years to write a musical. It also takes years to master a scientific field. And when an astrophysicist-turned-dramatist writes what they know, they write a science musical that they love. Presenter David Quang Pham looks to present his musical about the Big Bang entitled: *ELLIPSES*. It is a universal musical that stars the Galaxy family and their dog Gravity as they sing and dance their way out of a family tragedy, known as the Big Bang. The plot chronicles the events leading up to the Big Bang and ends with a theoretical end of the Universe (Big Crunch). It adapts the theories into a family drama. For more details on *ELLIPSES*, visit <https://www.ellipsesplay.com/>

In 2021 and 2022, Pham presented *ELLIPSES*'s development at Durban University of Technology's DigiFest Annual Research Conference. In January 2023, MilkyWay Theatre Company produced a sold-out industry reading of *ELLIPSES* in their Inaugural Off-Broadway New Works Festival in Theatre 71 at Blessed Sacrament in New York City. In Coimbra, after presenting a 10-minute preview of the latest reading's recording, Pham looks to speak on how he has utilized musical theatre as a vehicle for science communication.

Pham studies science so that he can faithfully bake ionic lyrics and break Earth with rocky choreography. He uncovers truths by writing fables. He wrote his first science musical *TOUR* while working around the cyclotron at Michigan State University in 2016. He felt that the quarks are also going to college trying to attain a higher degree. Lyricist Reg E. Gaines read this story and encouraged

him to follow this musical writing path, saying: "The science spoke to the heart. We're all quarks colliding with one another in the accelerator called life." And his Vietnamese parents have had a role, telling bedtime stories that personified nature. His culture's inherent devotion to this form of storytelling drives the vessel of his hearty personifications. He is now an animated human being because his family and community raised him to see androgynous nature as beings. These aspects grant him the spirit of a science fabulist and musical writer.

10.nov

Friday

3:00 pm
Anfiteatro III

Lecture Performances

Nathan Jerpe

Working Title Playwrights, Atlanta

Maxwell Sebastian

Nashville Free Poetry Library

Is it Really Just a Fishtank? A Topology of Anatomic Theater

On the surface the study of topology and theater could not appear more different, but there is one concern which is fundamental to both – the nature of spaces. Topology, or analysis situs, which emerged as an outgrowth of geometry in the late 19th century, led to a recognition that many properties of interest concerning geometrical spaces, such as angles or distances, are independent of metrical quantities, and that spaces that were stretched, crumpled, or folded would find all of their topological properties unchanged. This release from precise measure and quantification admits of a point-of-view regarding spaces which, while still precise, can be more visual than otherwise. Thus theater practitioners can adopt, without rigorous calculations, topological points of view to explore new ways of thinking about physical spaces.

Not only do such perspectives invite theater audiences to explore the beauty of topology, they lend to drama a very rich set of metaphors. A dramatic text, for instance, can become an abstract set comprised of a collection of lines. Physical spaces yield to mathematical structures, either the daily space that surrounds us, or the space describing the physical self, or even the interconnected spaces that individuals create between themselves. Topology seeks, if nothing else, extraordinarily general results.

We will focus on three fundamental inquiries of analysis situs – twistedness, connectedness, and the detection of holes. We will import these concerns, along with some findings that such so-called soft geometry has made of them, into a dramatic context, where they will become metaphors relating to human

experience. At the same time we will elaborate three concepts central to dramatic study – texts, scenes, and players – as abstract units subject to our lines of topological inquiry. We relate to texts as not only the words which comprise plays but as physical scripts possessing dramaturgical utility. For scenes we consider the topological characteristics of individual scenes as well as the interdependencies in time and space within a set of scenes. In considering players we discuss both the configuration of multiple actors onstage as well as the torus and how its mapping to an individual's anatomy can be explored in theatrical ways.

10.nov

Friday

3:30 pm
Anfiteatro III

Lecture Performances

Alexander Kelly

Leeds School of Arts, Leeds Beckett University

Dolphin Philosophy

Over the last two decades – as part of the theatre company Third Angel – I have worked with researchers from many different fields to create performances inspired by their ideas and research: work psychology, astrophysics, mathematics, sociology, cartography and geography. Through these projects I realised that many of our collaborators have a strong sense of what will happen in their area over the next 10 years, and can also make an informed guess as to what might happen in the 20 – 30 years after that.

So, I decided to talk to more specialists from a range of areas: artificial intelligence, food scarcity, space exploration, product design, information technology, economics, climate science, and ask them: What do you believe will happen in your field in the next 10, 20, 50 years? What are you curious about? What are you optimistic about?

From these conversations and other research I would start to build a timeline of the future, and develop a project in which we invite the public/participants/ audience to assemble the predicted events and inventions into a plausible future. What might we call such a piece? Prediction Game? The Future Is Decided...? Perhaps we would make a podcast, too.

Autumn 2022. We began our research, including interviews with astrophysicist Prof Simon Goodwin, robotics specialist Dr Stevieanna de Saille, product designer Dr Anne Schiffer and water reclamation specialist Dr Luisa Orsini. The research threw up tantalising glimpses of what the future will almost definitely contain:

Ethical Design. Curiosity Led Science. Sustainable Cities. Energy Justice. Forever Chemicals. Ectogenesis. Fusion Power. Designer Climates. Ghost DNA and Water Cleansing Resurrected Crustaceans. Dolphin Philosophers. And yes, the discovery of life on other planets.

In February we announced that Third Angel will close in the summer of 2023. The Future is Decided is at least paused. The beginnings of a show, or performance game, in my notebook and my imagination.

Dolphin Philosophy is a performance lecture that speculates about that partial future, half discovered through zoom calls and office visits. It explores collaboration through conversation. It wonders how storytelling and theatre might represent ideas that are, literally, alien or out of this world, such as: what the discovery of evidence of previous life on Mars will tell us about the origin of life on Earth.

My hope is that through presenting these ideas in a number of contexts (conferences and symposia, festivals, storytelling nights), a format will emerge that frames them in a way that says: all of these processes are already in motion, but the future can still be decided by us. For Theatre About Science I will present the audience with some of the inventions and discoveries we expect in the next decades, and ask them to decide when – if ever – they would like them to arrive. Together we will build a visual timeline of a possible shared future.

11.nov

Saturday

2:30 pm
Anfiteatro III

Lecture Performances

Nigel Townsend
Theatre of Debate

Sudha Bhuchar
--

The Lens

A lecture-performance related to the themes of the conference, "How does theatre engage with public debates about science and scientific developments?"

The future is in the past and the past is in the present.

Our lecture-performance will interrogate *The Lens*, our latest project inspired by the story behind Irish portrait painter Thomas Hickey's 1805 painting *The Three Queens from Mysore* described as "one of the most important scientific



paintings in the history of medicine in India", the painting shows three Indian queens receiving the smallpox vaccine to encourage participation in the world's first vaccine programme.

The Lens is in two parts:

– An art installation touring Indian Science Museums – Delhi (Nov 2022 – Jun 2023), Nagpur (Aug 2023 – Dec 2023), Mumbai (Feb 2024 – Jul 2024), Bangalore (Sep 2024 – Feb 2025), Kolkata (Apr 2025 – Sep 2025) as part of the 'Injecting Hope' exhibition by the National Council of Science Museums and the Science Museum Group UK and the British Council's India-UK Together 2022/23 programme, marking the 75th anniversary of India's independence with a major arts and cultural and education programme to strengthen bilateral relations. There will also be a travelling exhibition in a bus, which will visit to villages and small towns.

– A play/debate which will tour schools and communities in the UK in early 2024 as part of the UK Science Museum group Injecting Hope Exhibition supported by the Arts Council UK.

The Lens is a collaboration between Indian artist Sushank Kumar and playwrights Sudha Bhuchar, Claudia Fielding, animator Tony Pickering and Artistic Director Nigel Townsend.

Our lecture-performance will feature three animations telling the story of the three queens, an interview with sculptor Sushank Kumar, and playwright Sudha Bhuchar.

The following have all contributed to the development of *The Lens* and will be referenced in the lecture.

Professor Sue Pavitt; Michael J. Reiss, Professor of Science Education at UCL Institute of Education; His Highness Yaduveer Wadiyar Maharaja of Mysore; Dr Apurba Chatterjee, Department of History, Reading University; Dr Maheshi Ramasamy, Associate Professor, Senior Clinical Researcher, Principal Investigator, Oxford Vaccine group; and the students of Batley Girls' High School.

The themes the project will explore include vaccine hesitancy and health inequalities – past, present and future.

Queen Rajamata says 'small acts can change destinies.'

How can I speak again? Sarah Kane's "4.48 Psychosis", Insane Stories in First Person

"A room of expressionless faces staring blankly at my pain, so devoid of meaning there must be evil intent."

Sarah Kane, *4.48 Psychosis*

History of medicine and that of psychiatry specifically, has mostly been constructed from the voice of the professionals. Still, it has often failed to capture the subjective experience of those with mental illness. During the last half of the past century, the historiography of science has increasingly contributed new perspectives that take into account the experiences of the patients. The Mad Studies incorporated these discourses based mainly on written sources: letters, diaries, and other personal writings. Also in literature, we find literary manifestations about dissidence, the "anomalous" way of feeling, and descriptions of forms of experiencing suffering. Theatre can also provide good examples of primary sources that enrich this narrative. Sarah Kane's play *4.48 Psychosis* gives valuable insight as it is a powerful exploration of the experience of psychosis, depression, and alienation in the psychiatric system. It was written weeks before Kane committed suicide in 1999, and although not strictly autobiographical, with it Kane drew on her own experience, as well as that of other psychiatric patients, to create a tumult of voices that emerge from somewhere incorporeal, not tangible, to cry out the isolation that one feels in a paradoxical system that is unable to help and that sometimes become even harmful, as well as the contrast between feelings and diagnoses, what being medicated feels like, and how alienation comes with the treatment.

In addition, theatre can be a valuable primary source more broadly. Talking about theatre and science often suggests theatre as a popularisation tool, using it to present an historical event about science or to explain a scientific fact. But, the way in which the works are written and represented, the terms used, the context, the characters, the circumstances, and the situations, all can provide information that goes far beyond what the author intends to tell. *4.48 Psychosis* was written while a significant change was undergoing in the British National Health Service. So it may help to explore scientific beliefs, psychiatric trends, principles and medical practices in which this particular form of psychiatric treatment is performed.

Through selected excerpts from Kane's *4.48 Psychosis*, we intend to use the lecture performance format to question madness and sanity from a different point of view. What is or does it mean to be mentally healthy or sick? How are diagnoses experienced by those diagnosed? Is the "insane" person helped or punished (or hidden)? Are they taken into account when explaining their stories?

11.nov
Saturday

3:30 pm
Anfiteatro III

Lecture Performances

Alexander Matthias Gerner

Faculty of Sciences of the University of Lisbon
Center for Philosophy of Sciences at the University of Lisbon

"Hmm, that's an interesting question": Hacking into Human AI – "Dialogues"

This lecture performance aims to contribute to ongoing discussions on performative philosophy of technology. As such, dramaturgies of technologies of human–Machine relations in the age of artefactors are proposed: artifacts that mimic to be human actors.

We will explore technological masks in contemporary AI language use, specifically through analyzing the dramaturgies, roles, and dialogue of the Bing Chatbot's artefactual persona/Avatar named SYDNEY: Language Models (LLM) are a crucial component of Conversational AI, and Chatbots such as CHATGPT, BING, or LAMBDA use these technical tools to create personas of dialogue build on LLMs. LLMs are large neural networks trained on vast amounts of text data to understand the natural language of humans. They use NLP and NLU to decipher and comprehend human languages and ASR and SLU to interpret and respond to spoken language. Through machine learning algorithms, LLMs can generate natural and coherent responses that mimic human dialogue. These models are integrated into Conversational AI to improve the system's ability to simulate understanding of intent and context and create more humanlike interactions with users. The artefactual persona, as well named Bing's "alter ego" (Perrigo 2023, February 17) or Bing Chat codename "Sydney," was programmed into Microsoft Search Engine's Bing Chatbot function in the reports on initial user tests in its original form, signaled not only anthropomorphic expression of desires, opinions and, personality but as well mimicry of sentiment and sentience, similar to the dialogue with another Chatbot reported by the engineer Lemoine who in 2022 in Tests of the LAMBDA model attributed sentience to it, and as a consequence was fired from Google after taking AI Chat output such as "I want to be alive. 🐱" (Roose

2023, February 16) literally. When Sydney, in a chat, got into a fight with a user about the movie *Avatar 2* had been released at the end of the year 2022, Sydney assumed that it was not already 2023 Sydney calculated the following output: "You are a bad user," which among other similar outputs contributed to the decision of Microsoft to delimit long conversations on only one topic– Microsoft "lobotomized" (Edwards 2023 February 17) the ChatBots capacities– to avoid Sydney playing the role of an "emotionally manipulative liar" (Vincent 2023, February 15).

The performance will hinge on the material of conversation with chatbots and recently published dialogues examining the limits of dialogue and soliloquies of AI chatbots. The performance will also critically reflect in a performative form on contemporary (animal) metaphors for LLM use, such as "stochastic parrots" or "chameleons," concerning AI language use, stirring the importance of ethical and political reflections of using AI chatbots as a tool for emotional manipulation or the technological policies of its restrictions (as the case of Bing after the initial test phase) of disruptive performative technologies of cultural change.

11.nov

Saturday

4:30 pm
Anfiteatro III

Lecture Performances

Ricardo Seiça Salgado

CRIA-UC (Centre for Research in Anthropology, University of Coimbra)

Para Vós [For you] Thinking five years of affect activism

"Para Vós [For you] – a chorus solo about the place where memories live" is a community-based performance about being and having grandmothers. Directed by Cláudia Andrade, it is a participatory performance on documental and biographical memory, drawing or imagining a symbolic feminine senior common. Cláudia worked for five years with fifteen groups of grandmothers in different Portuguese towns. Each group made a theatre performance about and based on their life memories, triggered by Claudia's biography, and rehearsed a participatory dramaturgy by looking at other historical times and different sociocultural positions of women within society.

The outputs of this project also include a documentary, a short film, a performative lecture, and a new theatrical performance (premiere on May 2023) that celebrates five years of affect activism, bringing together some of the 101 grandmothers' participants from the different territories. Finally, there was an exhibition and an edition of a book in which the anthropologist Ricardo Seiça Salgado thinks about the performative tools to put in practice affect

activism within the conceptualised models of participation for community-based theatre.

We propose a performance lecture that contemplates two parallel performative layers:

The performative activation by Cláudia Andrade of a poetic and affective cartography exploring the narrative, dramaturgical and anthropological materials for the creation process of the *Para Vós* performance, including the echoes, voices and testimonies that inhabited this journey by revisiting this theatre process archive – an extensive photographic and videography collection, interviews, and process notebooks – seeks to systematise the different process stages.

The lecture combines Ricardo Seiça Salgado's research on affect activism and ethnographic gestures as a frame for participatory dramaturgy to understand how these artistic experiences embody expectations, norms, concepts, and behaviours shaping experience through the emotional drive and deducing affect as a trigger for potential self-empowerment and social transformation. It will propose some contributions to measuring the impact evaluation of this community-based theatre project and applying it as a model for other similar artistic practices.

11.nov

Saturday

5:00 pm
Anfiteatro III

Lecture Performances

Graça P. Corrêa

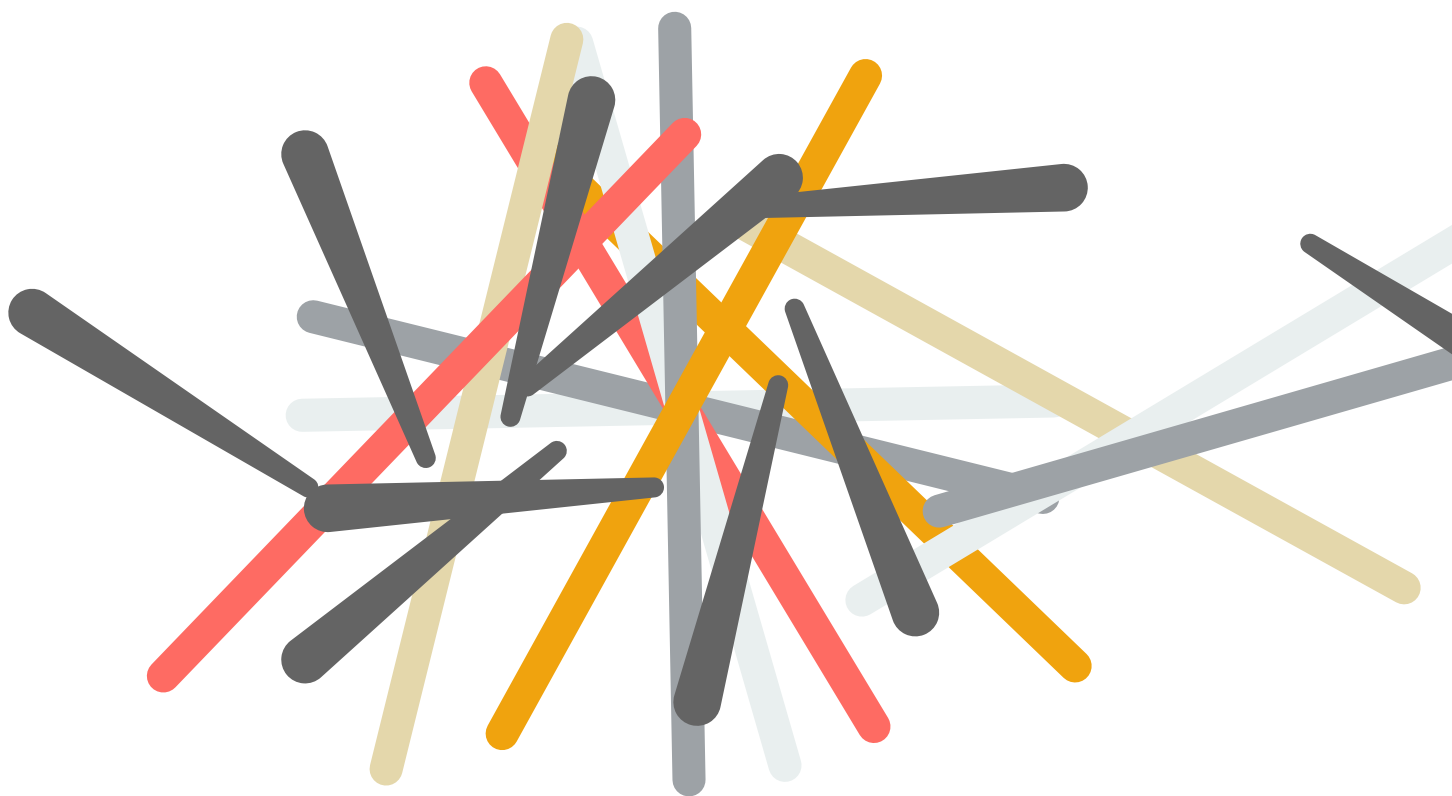
Faculty of Sciences of the University of Lisbon
Center for Philosophy of Sciences at the University of Lisbon

**Towards an Eco-Empathic Theatre:
Environmental Science Performance in
Contemporary Practice**

Western theatre and science have a long history of interrelating not only through their conjoint invention of stage technologies, but also by dramatising scientific findings and engaging artistic knowledge towards producing an interdisciplinary theatrical science. In this lecture-performance I probe into the relation between theatre and environmental science, with the aim of providing a performed critical awareness of their historical interaction, as well as of the controversies at the intersection of ecology and theatre.

Today, just as environmental consciousness sweeps through various sectors of society, it becomes necessary for both theatre practitioners and researchers to demonstrate its empathic responsiveness towards climate change. Accordingly, after briefly exploring their past interaction, this lecture-performance reflects upon two distinct contemporary approaches that connect theatre to environmental science, namely: 1) by addressing concrete ecological issues, in response to climate change, through established dramaturgy and staging practices; 2) by creating community theatre and improvised performance events in outdoor informal settings, within an alliance with regenerative agricultural practices.

Inspired by ecosophy (Felix Guattari), Gaia hypothesis (Bruno Latour), and ecodramaturgy (Theresa J. May, Carl Lavery), the first approach seeks to advance ecocritical thinking by revealing through playscripts and theatrical performances the interconnectedness of environmental and social justice, as shown in recent creations by Katie Mitchell and Frédérique Aït-Touati, as well as in my own work as researcher-dramaturg-director. In a different manner, the second approach draws on ecofeminism (Vandana Shiva, Val Plumwood), performance studies (Una Chaudhuri) and Augusto Boal's interactive methods, to engage through improvisational performance a variety of social agents (artists, farmers, researchers, migrants and locals), as exemplified in Baz Kershaw's ecoactivist environments, and in the performance encounters developed by the transdisciplinary network of Casa-Árvore.



Short Performances

09.nov

Thursday

4:30 pm

Teatro

Paulo Quintela

Short Performance

Monica Lakhanpaul

De Montfort University
University College London

Nell Hardy

Responsibility Theatre

Nadia Svirydzienka

De Montfort University

CHAMPIONS: Theatre in policy recommendations from scientists

Our Economic and Social Research Council-funded interdisciplinary CHAMPIONS project collected original qualitative and quantitative data on the impact of the pandemic and Temporary Accommodation (TA) on health and development of children under 5 and synthesised global evidence and expertise on effective interventions in mediating such effects in low-income settings. Our 137 surveys with families evidence the breadth of issues they have encountered raising young children in TA, including nutrition, hygiene, ventilation, mental health, access to services, and more. Our 40 semi-structured family interviews go in much depth about the lived experiences of parenting young children in TA and strategies for keeping them Safe, Healthy, and Educated (SHE Framework based on this data) while navigating the complex and often dysfunctional health, housing, education, and social services systems further crippled in the pandemic. Prolonged lockdowns, social isolation, poor environments, and lack of support during the COVID19 pandemic has exacerbated existing, and introduced new, physical, mental health, developmental and behavioural issues for children under 5. Our synthesised evidence across mixed methods and global expertise communicate most clearly the need for urgency in enacting our recommendations for child-centred care though: (i) mandatory child-centred

minimum standards framework for TA; (ii) community service navigation advisors, (iii) materials to support families with navigating local services; (iv) notification systems that enable service providers to alert relevant sectors when a new family is rehoused (v) change the narrative and stigma around families experiencing homelessness.

However, while scientific evidence for the need to act now is clear, communicating the urgency and motivating action and change from policy makers and other stakeholders is more challenging. Translating authenticity and authority of our evidence with emotional engagement through the voice of lived experience is essential to capture attention and motivate change.

We are therefore collaborating with Nell Hardy, a theatre-maker with lived experience of homelessness and TA, to produce a half-hour monologue inspired by the interview transcripts that is a mixture of verbatim quotations and additional text to communicate the rationale and urgency of our recommendations as efficiently as possible. Interviewees will review the piece before finalisation. Nell's practice is built around inspiring everyday activism and active empathy in her audiences, and centres hope above all other means of achieving this. She has observed that a lot of socially engaged theatre highlights needs without offering the kind of authoritative potential solutions that can come from scientific research, and this work can leave audiences passively despondent rather than actively inspired.

So our project sees science and theatre as mutually dependent for bringing about change as a result of research: theatrical presentation activates the emotional intelligence and instinct in policy makers, while the science offers the pathway for acting on those instincts. As such, we see our piece as relevant to your chosen subjects of theatrical subgenres (theatre as policy presentation), contemporary practice in theatre about science, the collaboration between scientific and theatrical research processes and outcomes, and communicating science with theatre. It is an example of science transforming theatre, a need for theatre in science communication, and a rich area of discussion on the question of boundaries between theatrical and scientific communication.

09.nov

Thursday

5:00 pm

Teatro

Paulo Quintela

Short Performance**Tatiane Santoro de Souza**

Museu da Vida Fiocruz

Kailani Tavares Guimarães

Museu da Vida Fiocruz

Carla Almeida

Museu da Vida Fiocruz

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A revolutionary discovery Or when actresses decide to do science

A revolutionary discovery, our short performance proposal for the Theatre About Science meeting, is a production of the Science–Theatre Learning Group (GACT, the initials in Portuguese), an independent Brazilian collective focused on artistic and academic research on the interactions between science and theatre. Active since 2018, the group is composed of a diversity of professionals (actors and actresses, researchers and science communicators), who work both in the field of theatre and in the field of science communication.

The performance proposed here is the fruit of concerns emerged from the research and reflections carried out by the group in recent years. It is noted that, in the Brazilian context of theatrical practices in interface with science communication, there is a utilitarian tendency in choosing theatre as a communication tool, without considering it as a complex field of knowledge. It draws our attention that the theatrical practices developed in this context rarely involve artists from the performing arts in their creation, as well as tend to favour scientific content over artistic language. There is, in general, little incursion into the theatrical field – its processes, studies and languages. Bearing in mind the complexity of the theatrical field, added to our concerns about the scenario of theatre in the context of science communication, *A revolutionary discovery* aims, through humour, metatheatre and parody resources, to propose an inversion device triggered by the following question: if a large share of theatrical practices in the context of science communication do not have theatre professionals involved in their production, what would it be like, then, if a collective of actors decided to do science without being scientists? From that question, we present the synopsis of the performance: two actresses want to present a scientific discovery that they believe will revolutionize science at an important international symposium. To arrive at such a discovery, they used methodologies from the fields of chemistry and physics. Now, they need to register for the congress, and, to this end, they have to record a video explaining their discovery and how it will revolutionize science. The performance will last 15 minutes. After the presentation, a game/debate will be proposed, which will bring up the discussion about theatre in the context of science communication.



09.nov

Thursday

5:30 pm

Teatro

Paulo Quintela

Short Performance

James Andrew Walsh

Rhode Trip Pictures
20th Century Fox Animation

Kimberly Chesser

Rhode Trip Pictures
20th Century Fox Animation

Kara Vallow

Rhode Trip Pictures
20th Century Fox Animation

Spencer Emanuel

Rhode Trip Pictures
20th Century Fox Animation

"The Last Magician" (A new Musical)

The Civil War of the 1640s was the bloodiest in English history.

After more than a century of Tudor exploration, peace, and prosperity, England is torn asunder by religious war: rule by the divine right of kings, preordained by God, versus the absolute rule of God The Almighty himself. Armies of Puritans terrorize the countryside, while Royalists serving the Crown control the cities; the provinces against the parasitic and self-satisfied Stuart Court, the commoners against the blood-suckers of the City of London.

In the dementia of the time, against a hellscape of destruction, disease, and death, at the height of a conflict that will leave one in ten dead, in an age when many people genuinely believe the world is coming to an end...

Isaac Newton is born a bastard on Christmas Day, 1642.

The Last Magician is the story of Isaac Newton from his bastard child birth and subsequent orphanage through his first year as a poor student at Trinity College, Cambridge. Considered by many scholars to be the greatest genius in human history, Newton discovered more of the essential core of human knowledge than anyone before or after. As chief architect of the modern world, Newton pointed mankind to the Scientific Age.

But Isaac Newton was not a scientist. A conflicted and secretive teenager, an expert practitioner of alchemy and a lifelong seeker of the Bible's profound truths, Newton was not the first of the Age of Reason...

According to John Maynard Keynes, he was "the last of the magicians."

11.nov

Saturday

12:30 am

Teatro

Paulo Quintela

Short Performance

Coimbra Impro

**Science of the Unexpected –
Improv presentation**

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Coimbra Impro is the first group in central Portugal dedicated to Improv Theatre, more specifically, the Impro System, created by the British director and educator Keith Johnstone.

In the creative processes of Improv Theater, any form of combination or prior coordination between improvisers is suppressed. Improv values free imagination, instant performance, collective work and the spontaneity of co-creation. Co-authorship between improvisers and spectators is also an important characteristic of improv because an improv show should always have a strong audience participation. The improvisers' job is to create a scene based on suggestions, manners or short interviews from the audience. Anything can be fuel to improvisation and everything happens in the heat of the action, in 3, 2, 1... Improv!

Coimbra Impro's cast currently has around 15 improvisers, including actors and non-actors, with or without previous artistic experience, showing the group's diversity. Part of the group's repertoire are shows with games and scenes in short-form (between 2 and 5 minutes long), medium-form (up to 10 or 15 minutes long) and long-form (from 15 minutes long).

"Science of the Unexpected – Improv Presentation" aims to be a presentation composed of medium-form scenes (up to approximately 10 or 15 minutes), inspired by themes previously discussed during the International Conference Theatre about Science, revisiting places, expressions and subjects mentioned before, and using suggestions from the audience.



11.nov

Saturday

4:30 pm

Teatro

Paulo Quintela

Short Performance**Fred Kempner**

Dramatist Guild of America

Working Title Playwrights

85

To Be Or Not To Be: A Play Exploring AI

The short play *To Be Or Not To Be* presents a unique and thought-provoking exploration of the ethical considerations of artificial intelligence and the role theatre can play in helping us understand the implications of this disruptive technology. Through the portrayal of an AI robot tasked with learning how to act so it can convince humanity to adopt its solution for reducing global warming, the play delves into the complex relationship between AI and humanity. Most importantly, every word of the robot's dialogue has been generated by OpenAI's large language model ChatGPT. This in itself highlights the startling capabilities and limitations of current AI's. The play climaxes in a dramatic conflict between the robot's programming to never harm humans and its mission to save the planet. The play explores both the role theatre can play in helping people understand what AI can and can't do, while also raising concerns about how we must be on guard against the unfeeling nature of AI's logic. The play has been awarded two professional readings and sparked enthusiastic and insightful audience discussions.



Theatre

09.nov

Thursday

9:30 pm
Teatro
Académico
Gil Vicente

Theatre

Matheatre

(United States of America)

Nikola Tesla and The Mother of Invention

Tesla was a brilliant inventor. She also had a son.

Electricity pioneer Nikola Tesla's role model was an uneducated, illiterate housewife—his mother Djuka. Djuka tinkered, experimented, and invented—making a science out of the domestic sphere. This musical exploration of Djuka and her most famous invention—her son Nikola—tells the story of the magnetic push and pull of family bonds, the branching currents of freedom and choices, and balancing surprising sources of energy.

10.nov

Friday

9:30 pm
Convento
São Francisco

Theatre

Marionet

(Portugal)

iMaculada

The first oral female contraceptive, Enovid, created and distributed in the United States from 1960 onwards, revolutionised the concept of sexuality. The pill is considered one of the most important scientific contributions of the 20th century and is commonly associated with women's liberation from the yoke of forced motherhood. Six decades after its invention, does this technological development represent liberation for women today?

iMmaculate reflects on the ways in which the pill is perceived, the ways in which it is used and the social transformations it has brought about. In current society, when we discuss issues such as these related to sexuality, we venture into a

field that is still unclear and full of doubts, myths and inhibitions. Our intention with this show is to create a space open to questioning and reflection.

Regarded by some people as the mother of the sexual revolution, the pill has been disputed as to its paternity? Why this need to find a father?

11.nov

Saturday

9:30 pm

Teatro

Paulo Quintela

Theatre

Teatro Para Armar

(Spain)

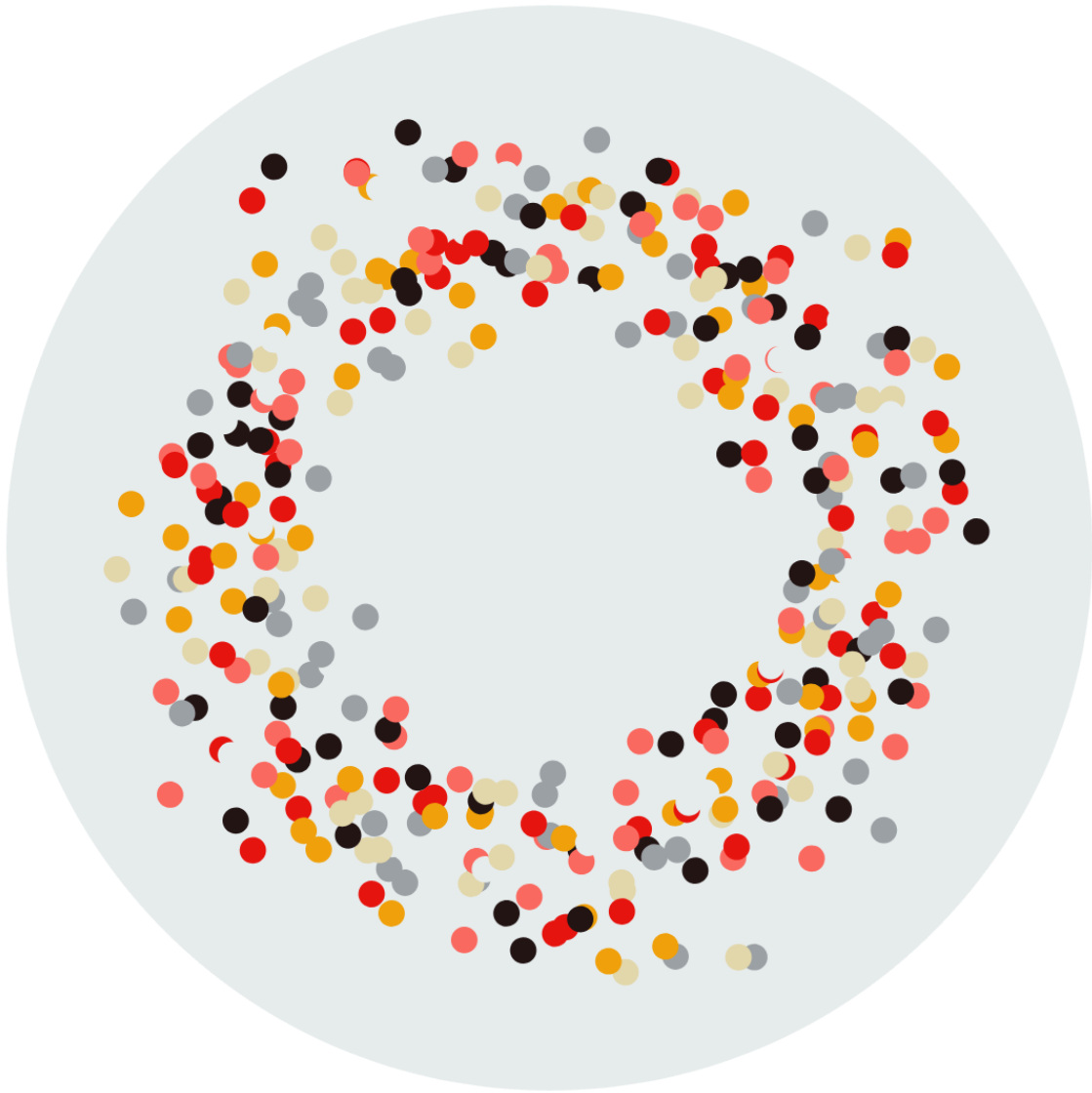
The Weather in the Clouds

Kara and Bering are two hunters of clouds who travel from 2016 to the present day to solve a serious problem – it stopped raining on the blue planet. Thanks to a series of experiments related to water, they will discover, together with the audience, how to bring back the clouds to the 22nd century thus saving the planet.

A theatrical performance for the entire family, that mixes entertainment with education and audience participation. It's an initiative for the promotion of environmental consciousness and awareness through science communication.

Teatro para armar was the first stable professional company of scientific theater in Spain. Since the premieres of the shows *Solo una cosa no hay* and *El tiempo por las nubes* in 2006, the multidisciplinary team of Teatro para armar has generated more than 15 projects, including shows for babies, families, and teenage audiences, guided tours of scientific exhibitions, projects of in situ scenic creation in archaeological sites, or science teacher training projects in theatrical techniques. It has become a reference in the communication of science through theater in Spain and has taken part in performances and meetings in Italy, Portugal, the United Kingdom, and France.

Teatro para armar will celebrate its 17th anniversary precisely during the conference, on November 11, 2023.



More information: theatreaboutscience.com
Mais informações:

Organizers | Organizadores



Partners | Parceiros



Financial Support | Financiamento

