

University of Rome, “Roma Tre”
Department of Philosophy

Email: tvista3@gmail.com

Website: <https://tizianavistarini.academia.edu/>

Employment

Visiting Scholar in the Department of Philosophy at the **University of Rome, “Roma Tre”** – as of January 2019.

Full time Lecturer in the Department of Philosophy at the **University of Colorado Boulder** – January 2016-May 2018.

Visiting Assistant Professor in the Department of Philosophy at the **University of Illinois at Chicago**– January 2015-July 2015.

Postdoctoral Associate at Rutgers University in the *Multi University Templeton Project in Philosophy of Cosmology* (co-directors: David Albert and Barry Loewer) – January 2013- January 2015.

Education

PhD in Philosophy at the **University of Illinois at Chicago**, May 2013. Thesis: “**Emergent Spacetime in String Theory**”.

Master in Physics at the **University of Illinois at Chicago**, August 2012.

“**Laurea**” (i.e. BS+MS) in **Mathematics** at the **University of Rome “Roma Tre”**. Master’s thesis: “**Moduli Space of Curves**”, 2004.

“**Laurea**” (i.e. BA+MA) in **Philosophy** at the **University of Rome “La Sapienza”**. Master’s thesis: “**Wittgenstein on Normativity and Rules**”.

Research interests

Areas of Specialization: Philosophy of Physics, Philosophy of Science, Metaphysics.

Areas of Competence: Philosophy of mind, Philosophy of cognitive science, Philosophy of Biology, Epistemology, Logic, Philosophy of Mathematics.

Publications

- **Books:**

“**The Emergence of Spacetime in String Theory**”, forthcoming for the new series of the *Philosophy of Mathematics and Physics*, **Routledge**, 2019.

- **Papers:**

“**Extending Lewisian modal metaphysics from a specific quantum gravity perspective**”, contribution for the miscellaneous volume *Beyond Spacetime: The Philosophical Foundations of Quantum Gravity*, for **Cambridge University Press**, forthcoming 2019.

“**Holographic space and time: Emergent in what sense?**” in **Studies in History and Philosophy of Modern Physics**, Special number on **Dualities in Physics**, 13 September, 2016.

“**Deriving General Relativity from String Theory**”, **Philosophy of Science**, 82, December 2015. Co-author with Nick Huggett.

“**Out of space – Out of time. Spazio e Tempo nella Teoria delle Stringhe**”, in “**La Guerra dei Mondi? Scienza e Senso Comune**” [The War of the Worlds? Science and Common Sense]. Edited by A. Lavazza and M. Marraffa, **Codice**, Turin, 2016.

“**Review of ‘String Theory and the Scientific Method’**” (book by Richard Dawid) **International Studies in the Philosophy of Science** 28,108-111, 2014

“**Time in Quantum Gravity**” for Adrian Bardon and Heather Dyke (eds), **The Blackwell Companion to the Philosophy of Time**, 2011. Co-author with Christian Wüthrich and Nick Huggett.

“**Entanglement exchange and Bohmian Mechanics**”, **Manuscrito, Issues in the Philosophy of Physics**, Edited by Décio Krause and Otávio Bueno, Vol 33, Jan-Jun 2010. Co-author with Nick Huggett.

PhD Dissertation in Philosophy

Title: Emergent Spacetime in String Theory.

Committee: Nick Huggett (UIC, thesis supervisor), Kevin Davey (University of Chicago), David Hilbert (UIC), Jon Jarrett (UIC), , Arthur Licht (UIC, Department of Physics).

Abstract: My dissertation lays the basis for one of my present research topics in metaphysics and in physics about the disappearance of space and time from the fundamental laws of quantum gravity. My PhD thesis is focused on spacetime emergence in string theory. During the last thirty years the notion of spacetime introduced by general relativity has been object of a critical review in light of the new emerging theories of quantum gravity. String theory is one of them. By trying to combine the principles of both general relativity and quantum theory, string theory elaborates a revolutionary description of physical dynamics at the smallest length scale. One of its novelties is that *there is a distance in spacetime, the smallest physicists believe exists, at which point the notions of space and time lose meaning*. Strings do not move along spacetime, rather, spacetime re-appears as an emergent macroscopic entity “produced” by underlying string dynamics “happening” at the smallest scale. My dissertation analyzes this notion of emergence especially from the perspective of deep symmetries of the theory’s laws, known as “dualities”. Moreover, the thesis presents a mathematical and philosophical exploration of the use of string theory’s moduli space. The moduli space of a theory is a kind of navigation system through the physical content of its laws. It allows an indirect exploration of those parts of the physical content not directly accessible.

This exploration *via* moduli space recently evolved in two advanced results. The first, presented in chapter six of my Routledge book, delivers a multilayer argument for background independence of string theory. There I define on the theory’s moduli space a topological-fiber bundle structure carrying dynamical information supporting two thesis of background independence of the quantum string laws. In other words, reading through that structure unveils the genuine metaphysical commitment of string theory to the non-fundamentality of space and time. The second result analyses how the very same topological-fiber bundle structure of string theory’s moduli space also carries structural properties extending those of Lewisian similarity order and Lewisian nomological accessibility. In other words, the essay proposes a way of extending those two main components of Lewisian modal realism from the perspective of quantum string theory. The essay is forthcoming in a CUP miscellaneous volume on the philosophical foundation of quantum gravity.

Fellowships and Awards

Outstanding Thesis Award, University of Illinois at Chicago, Graduate College, Fall 2013.

Chancellor's Graduate research fellowship for multidisciplinary research at the University of Illinois at Chicago, Summer 2012.

Post graduate visitor at Oxford University, Oriel College, Summer 2012.

Research Assistant of Prof. Nick Huggett for **ACLS Collaborative Research Fellowship on emergent spacetimes in quantum gravity**, Summer 2010, Summer 2011, Summer 2012.

Provost's Award won during Spring 2009 to support attendance at the Summer School in Philosophy of Physics, "**Geneva Summer School 2009**", (Switzerland).

Talks

Invited Speaker at the International Workshop **Quantum Gravity: Physics and Philosophy**, ERC Project Philosophy of Canonical Quantum Gravity, Paris, France, **October 24/27, 2017**, <https://indico.math.cnrs.fr/event/2429/>

Invited Speaker at the **XX International Summer School of Philosophy of Physics, Space and Time in Quantum Physics**, Urbino, Italy, **10th- 13th July, 2017**.

Speaker at the **3rd International Conference on the Philosophy of Quantum Gravity**, Geneva, **27-30 June 2017** (Switzerland)

Invited speaker for the **2017 Speaker Series** of **Beyond Space: The Philosophical Foundations of Quantum Gravity**, March 29, 2017, **University of Illinois at Chicago** and **University of Geneva**.

Invited speaker for the **Colloquium Series** at the **University of Colorado at Boulder**, Philosophy Department, "**No time for Strings. Being a Mechanistic Philosopher at the Planck Scale**", October 21, 2016.

Invited Speaker at the **International Association for the Philosophy of Time 3rd Annual Meeting**, Winston-Salem, North Carolina, 9-11 June, 2016.

Speaker at the conference on the **Philosophical foundations of quantum gravity, *Beyond Spacetime II***, **University of California, San Diego**, "**Time in String Theory: dS/CFT conjecture**", 13-14 March, 2015.

Speaker at the 2014 **Philosophy of Science Association** conference, "**Deriving General Relativity from String Theory**", co-authored with Nick Huggett, Chicago, November 2014.

Speaker at the conference on the **Philosophical foundations of quantum gravity, *Beyond Spacetime***, **University of Illinois at Chicago**, Sept 27-Sept 29, 2013.

Invited speaker at the **University of California at Santa Cruz, Institute for the Philosophy of Cosmology**, June 23- July 14, Summer School 2013.

Conferences/Talks Organizational activities:

Co-Organizer of the Annual Boulder Conference (along with Prof Allan Franklin), "**Gravity: Its History and Philosophy**", October 28-30, 2016, University of Colorado at Boulder, Physics Department.

Editorial Activities:

Referee for **Studies in History and Philosophy of Modern Physics**, for **Foundations of Physics**, for **Synthese**, for **Journal of the American Philosophical Association**, for **The British Journal for the Philosophy of Science**

Teaching experience:**Full-Time Instructor at the University of Colorado at Boulder, Department of Philosophy:**

PHIL 3430 (**History of Science from Newton to Einstein**) in **Spring 2018**.

PHIL 1400-Honor Class (**Philosophy and Science**) in **Spring 2018**

PHIL/PHYS 5450/4450 PHIL4450 – graduate/undergraduate, cross-listed under Philosophy and Physics Departments (**History and Philosophy of Physics**) in **Spring 2018**.

PHIL 3430 (**History of Science from Newton to Einstein**) in **Fall 2017**.

PHIL 1440-001 and PHIL 1440-002 (**Introduction to Logic**) in **Fall 2017**.

PHIL 1400 (**Philosophy and Sciences-Honor**) in **Spring 2017**.

PHIL 1440-001 and PHIL 1440-002 (**Introduction to Logic**) in **Spring 2017**.

PHIL 3430 (**History of Science from Newton to Einstein**) in **Fall 2016**.

PHYS 5450/PHYS 4450/PHIL5450/PHIL4450 – graduate/undergraduate, cross-listed under Philosophy and Physics Departments (**History and Philosophy of Physics**) in **Fall 2016**.

PHIL 3410 (**History of Science from Ancient to Newton**) two sections in **Spring 2016**.

PHYS 5450/PHYS 4450/PHIL5450/PHIL4450 – graduate/undergraduate, cross-listed under Philosophy and Physics Departments (**History and Philosophy of Physics**) in **Spring 2016**.

Visiting Assistant Professor at the University of Illinois at Chicago, Department of Philosophy:

PHIL 203 (**Metaphysics**), **Spring 2015**.

Post Doc at Rutgers University, Department of Philosophy:

PHIL 109 (**Introduction to formal reasoning. Deductive and Inductive Logic**), **Spring 2014**.

Primary Instructor (graduate student) at the University of Illinois at Chicago, Department of Philosophy:

PHIL 102 (**Introductory Logic**) in **Fall 2011**.

Teaching assistant (graduate student) at the University of Illinois at Chicago, Department of Philosophy:

PHIL 102 (**Introductory Logic**) in **Fall 2007, Fall 2008, Spring 2009, Spring 2010, Fall 2012**

PHIL 105 (**Philosophy and Science**) in **Spring 2008**.

PHIL 100 (**Introduction to Philosophy**) in **Fall 2009, Spring 2011**.

Teaching assistant (senior master student) at the University of Rome “Roma tre”, Department of Mathematics:

Linear Algebra (**Geometry 1**), Topology (**Geometry 2**), Affine and Projective Geometry (**Geometry 2**), 2002-2004.

Languages:

Italian native speaker, English almost native speaker, reading knowledge of Spanish, French and ancient Latin.

Referees (please contact Kei Hotoda at khotod2@uic.edu She is the UIC department's secretary taking care of uploading and/or emailing all my reference letters.)

- 1) **Barry Loewer**, Chairperson of the Rutgers University Department of Philosophy, Director of the Rutgers Center for Philosophy and the Sciences, Co-director of the Rutgers Templeton Project in Philosophy of Cosmology.
Rutgers University
School of Arts and Sciences
Department of Philosophy,
106 Somerset St.
5th Floor, New Brunswick, NJ 08901-4800
Email: loewer@rci.rutgers.edu
- 2) **Nick Huggett**, Professor and Director of Graduate Studies of the Philosophy Department at the University of Illinois at Chicago.
University of Illinois at Chicago
College of Liberal Arts and Sciences
Department of Philosophy,
1423 University Hall, 14th Floor
601 South Morgan Street
Chicago, IL 60607-7109
Email: nickhggt@gmail.com
- 3) **Allan Franklin**, Professor Emeritus of the Physics Department at the University of Colorado at Boulder.
University of Colorado at Boulder.
Department of Physics 390 UCB
Boulder, CO 80309-0390
Office: DUAN F413
Email: allan.franklin@colorado.edu
- 4) **Massimo Marraffa**
Full Professor
University of Rome "Roma Tre"
Department of Philosophy, Communication and Media Studies
Via Ostiense 234
00144 - Rome (Italy)
Telephone: 39-06-5733(8)409
E-mail: massimo.marraffa@uniroma3.it
WEB Site: <http://host.uniroma3.it/docenti/marraffa/index.htm>