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Jacopo Rosino Giraldo

Address: via Emilia, n.10, 36075, Montecchio Maggiore , Italy

Email address: jacopo.giraldo@stud.unifi.it

Phone number: (+39) 3318647518

Website: https://themetaphysicsofquantumobjects.wordpress.com/visitors/

Date of birth: 08/03/1997 **Nationality:** Italian

ABOUT ME

I am currently a PhD student at the University of Lisbon (CFCUL). I was an MA student in the program in Logic, Philosophy and History of Science at the University of Florence, where I graduated *cum laude* in October 2022, Professor Andrea Cantini and Doctor Giulia Schettino being my supervisors.
After having obtained my Bachelor's degree in Mathematics at the University of Padua with first class honours, I decided to delve into philosophy of science, with particular regard to analytic metaphysics and philosophy of physics.
Currently, I am also working at the University of Florence as a teaching assistant of Professor Laura Poggiolini in mathematical analysis and probability.
For the Master in which I was enrolled, I wrote a thesis dealing with some topics strictly concerning mereology, which is commonly known as the study of the famous relation between the whole and its parts. Precisely, I studied the metaphysical possibilities of extended simples and unextended complexes with a logical and physical approach to this issue. I had the possibility to deepen into these themes also thanks to Professor Øystein Linnebo during my Erasmus experience this last fall semester at the University of Oslo—my stay was financed by the University of Florence. During that period, I also widened my English skills as the IELTS exam that I took in December 2021 can confirm—I was scored 6.5 (level C1).
I was a visiting student at the University of Geneva where I was invited by Professor Claudio Calosi to join the SNF-funded project *The Metaphysics of Quantum Objects* which he leads. In Geneva I was also an invited member of both *Eidos* (the Centre for Metaphysics) and the *Geneva Symmetry Group*.
During my studies I have been among the winners of several scholarships awarded on merit. Among them, I am especially proud to be one of the funded students admitted to the Path of Excellence of the University of Florence. In this Path, I attend lessons and conferences held by visiting professors who are experts in the fields of humanities.
I am happy to have been recently accepted for giving an oral presentation on the metaphysics of extended simples and unextended complexes inside the project *Leibniz on numbers, mathematics, and physics (2022)* led by Filippo Costantini, Jeffrey Elawani, and Richard T.W. Arthur. This presentation constituted a fundamental start of my academic career, that I will continue as a PhD student at the Centre for Philosophy of Science of the University of Lisbon. My objective is to broaden my education in analytic metaphysics and to give my own contribution to the aforementioned studies.

EDUCATION AND TRAINING

[01/10/2022 – Current] **PhD**

University of Lisbon - CFCUL

Field(s) of study: Metaphysics of science
Level in EQF: EQF level 8

Main subject / occupational skills covered:
Title of the PhD project: *Extended simples and unextended complexes: a metaphysical evaluation under a logical and physical insight.*

[10/2020 – 10/2022] **Master in Logic, Philosophy and History of Science**

University of Florence https://www.lmlogica.unifi.it/changelang-eng.html

Final grade: Weighted average: 30/30 cum laude **Level in EQF:** EQF level 7
Number of credits: 120 ECTS credits
Main subject / occupational skills covered:
I took exams in advanced logic, especially concerning proof theory and theory of calculability, and in philosophy of science, specifically in the field of studies devoted to the metaphysics of space and time. Furthermore, I studied philosophy of mind as well, with a focus on the theory of intentionality. I also had the possibility to deepen my education in quantum mechanics, investigated with an axiomatic approach. In this moment, I am writing my Master's thesis under the supervision of Professor Andrea Cantini and Professor Elena Castellani (discussion forecast: October 2022). The main topic is the metaphysics of extended simples and unextended complexes. Professor Øystein Linnebo, from the University of Oslo, and Professor Claudio Calosi, from the University of Geneva, are helping me to elaborate the mentioned thesis.

[10/2016 – 04/2020] **Bachelor in Mathematics**

University of Padua https://www.unipd.it/en/dm

Final grade: First class honors **Level in EQF:** EQF level 6
Number of credits: 186 ECTS credits
Main subject / occupational skills covered:
During my Bachelor's degree I studied firstly algebra, geometry and mathematical analysis. Then my interests have been concentrating in mathematical physics and logic, subjects allowed to be studied starting from the second year course. Finally, during my final year I decided to write a thesis dealing with the Noether theorems under the supervision of Professor Franco Cardin (thesis's title: *Revisiting of Noether's theorems: from Levi-Civita to the theory of Lie groups*). Together with mathematical and physical courses, I took also two exams in philosophy, precisely in History of Philosophy (Professor Fabio Grigenti, 9 ECTS, top mark) and Theoretical Philosophy (Professor Luca Illetterati, 9 ECTS, top mark). Thanks to this, I developed important competences in the philosophical landscape, delving into the strict relation between philosophy and the foundations of both mathematics and physics. Final mark converted in the Portuguese system: 20/20.

[03/2022 – 05/2022] **Visiting student**

University of Geneva https://www.unige.ch/lettres/philo/en/students/our-department/

Main subject / occupational skills covered:
I spent three months at the University of Geneva as a visiting student under the supervision of Professor Claudio Calosi. I did research on the metaphysics of extended simples and unextended complexes inside the project *The Metaphysics of Quantum objects* which Professor Claudio Calosi leads. The aim of my research was to assess the logical dependence between two different types of extended simples and unextended complexes, one linked with a mereological concept of extension and the other built up using the concept of Lebesgue measure.
In addition, I was invited by Professor Claudio Calosi to join all the research activities of both *Eidos* (the Centre for Metaphysics) and the *Geneva Symmetry Group*.

[09/2021 – 01/2022] **Visiting student (Erasmus program)**

University of Oslo https://www.hf.uio.no/ifikk/english/

Main subject / occupational skills covered:
I spent one semester within the Erasmus exchange program between the University of Florence and the University of Oslo. During my stay in Oslo, Professor Øystein Linnebo was my supervisor and we met on a regular basis in order to discuss topics related to mereology and the theory of persistence. For my stay in Oslo I was also selected for an Erasmus grant provided by the University of Florence.

IELTS Exam

https://www.ielts.org

Final grade: 6.5 (C1)
Main subject / occupational skills covered:
I obtained the IELTS certification on 18/12/2021 and the result is valid for two years. Test Report Form (TRF) Number: 21IT011895GIRJ010A

WORK EXPERIENCE

[01/01/2022 – Current] **University teaching assistant**

University of Florence

Main activities and responsibilities:
I have been confirmed for the same teaching assistant role of the previous a.y.

[01/01/2021 – 31/12/2021] **University teaching assistant**

University of Florence

Main activities and responsibilities:
I worked as the teaching assistant of Professor Laura Poggiolini at the Engineering School of the University of Florence, leading classes in Mathematical Analysis II and Probability and providing explanations and exercises to prepare students to take their exams. These are the links to our activities:

1. https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2021&afId=563005
2. https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2020&afId=536691
3. http://tutoringinf.github.io/contattaci.html

WORKS

Extended Simples, Unextended Complexes: revisiting of their metaphysical possibility through a new definition of 'extension'

On 17/06/2022 I am going to hold an online talk inside the conference *Leibniz on numbers, mathematics, and physics (2022).*

Talk's abstract: Extended simples and unextended complexes have been thought as possible entities based on a break of the mereological harmony. The latter states that the mereological structure of objects and the one of their exact locations perfectly mirror one another. According to such a mereological notion, being extended boils down to having a mereologically complex exact location. I contend that this notion is simplicistic since it is not able to capture how much an entity is extended. Nonetheless, it is possible to provide a theoretical framework in order to come to the aid of that. The Lebesgue measure theory epitomizes this environment and I give reasons to consider it as a well-justified option. Given such a background, two Lebesgian definitions of extended simple and unextended complex are provided. Furthermore, their logical dependencies with those mereological are also assesed. How does this change affect the metaphysical possibility

of extended simples and unextended complexes? Dependently on the type of extension that we want to hold, extended simples and unextended complexes violate very different principles at the basis of the mereological harmony. This last aspect is assumed as decisive in order to consider the legitimacy of their metaphysical possibility. Finally, two different instantiations of the relation "being less extended than", one mereological and the other Lebesgian, are provided. On the one hand, that mereological does not entail the Lebesgue one, on the other hand the converse might hold but it needs more metaphysical assumptions in order to be fully accepted.

Extended Simples, Unextended Complexes

On 04/05/2022 I held a talk regarding the metaphysics of extended simples and unextended complexes within the course Advanced Topics in the Philosophy of Science taught by Professor Elena Castellani at the University of Florence.

Challenging Mereological Harmony: Extended Simples, Unextended Complexes, and Extension revisited

Abstract of the Master's thesis: A material object x is an extended simple (ES) if and only if x is exactly located at an extended spatial region r without having (actual) material proper parts. Contrariwise, a material object x is an unextended complex (UC) if and only if x has (actual) material proper parts and is exactly located at an unextended region of space. These entities constitute a break of the mereological harmony, which states that the mereological structure of material objects and their exact locations perfectly mirror one another. Firstly, in the Thesis I present classical mereology, the usual framework through which ESs and UCs are defined. Successively, I inquiry into different logical systems ruled by structural harmonies

possibly held between the material world and the space(time). Four theories of material fundamental composition turn out to be differently compatible with such systems. They are grounded on three distinct ontologies, based either on atoms, or gunkies, or ESs. Each of those theories seems to be incompatible to some extent with metaphysical naturalism, the philosophical thesis affirming that being material boils down to being physical and being physical is an intrinsic property of material objects. It is worth noting that the definition of extension widely used in the previous discussion is mereological. However, in the Thesis I present compelling reasons to consider that relying on a mereological definition of extension is at least limitative. The mathematical framework in which the Lebesgue theory can be formulated turns out to be both a useful and metaphysically justifiable mean to solve such a drawback. Once the Lebesgue theory has been picked up, the Lebesgue definition of extension is provided. This theoretical switch allows for the reformulation of ES and UC used so far, for then examining their metaphysical possibilities closely to mereological harmony's principles. Latly, I conclude the Thesis with presenting future theoretical paths. They are meant to further investigate what other possible formulations of the concept of extension can be drawn (such as the extension simpliciter), how the formalization of space(time) influences the ESs and UCs, and, finally, which types of ES or UC are acceptable within up-and-coming theories of quantum gravity. Indeed, the latter seem to posit objects with a controversial mereological structures.

Revisitation of Noether's theorems: from Levi-Civita to the theory of Lie groups

Abstract of the Bachelor's thesis: In 1918 Amalie Emmy Noether publishes Invariante Variationsprobleme, a fundamental work in which she proposes a famous theorem, which later went down in history with her name, that explains the relationship between global symmetries and conserved quantities. It is still little known that the Noetherian article presents a further theorem concerning local symmetries, transformations which leave the mathematical description of the system unchanged, but depending on the point

in space-time in which they are performed. The thesis therefore engages in examining in particular Noether's second theorem, and then goes to an “extension” of the Noetherian theory by building the Momentum Map. Specifically, the latter provides a vector-like invariant function, whose components are scalar first integrals and whose dimension is linked to the dimension of a group action. It is worth noting that the aforementioned meaning of “extension” is immediately clarified since it is possible to interpret the Momentum Map in a Noetherian way, obtaining the first expected classic integral. Whenever the dimension of the invariant Lie group action achieves the dimension of the base manifold Q, the reduced system becomes trivial (zero-dimensional one), no residual system has to be solved, and our original system is fully integrated: we are so coming inside the Liouville integrability landscape. The thesis proceeds by presenting a notable result of the Momentum Map: through the equivalence of the space Kepler problem with the geodesics on the 3-dimensional sphere and applying the Momentum Map theorem, we obtain prime integrals that allow us to prove the conservation of the angular momentum and the Runge-Lenz vector.

HONOURS AND AWARDS

[12/2021]

Continuation of the Scholarship for enrollment in Master's degrees a.y 2020/2021

Awarding institution: University of Florence

The scholarship for enrollment in Master's degrees is constituted by fundings given to those students that obtain a Bachelor's degree with full marks and promotes the students' career with €3000 per year. I had the chance to be funded for an additional year, the final one of my Master's degree, thanks to my high weighted average.

[12/2021]

Scholarship for admission to “Percorso di Eccellenza” (the Path of Excellence) a.y. 2021/2022

Awarding institution: University of Florence

The Path of Excellence is an additional course to my current studies. It has an interdisciplinary nature and involves various classes in the humanities, from philosophy to art history. The scholarship consists of €2000. It is the continuation of the Path of Excellence attended during a.y. 2020/2021, after having passed the final exam.

[05/2021] **Erasmus Scholarship** **Awarding institution:** University of Florence

As a winner of the Erasmus project to be carried out at the University of Oslo, I was selected for a scholarship consisting of €2000 provided by the University of Florence.

[12/2020] **Scholarship for enrollment in Master's degrees a.y 2020/2021** **Awarding institution:** University of Florence

[12/2020]

Scholarship for admission to “Percorso di Eccellenza” (the Path of Excellence) a.y. 2020/2021

Awarding institution: University of Florence

[02/2020] **Scholarship awarded on merit Awarding institution:** University of Padua

The scholarship awarded on merit is an economic contribution given to those students that demonstrate achievement of relevant academic results.

[02/2019] **Scholarship awarded on merit Awarding institution:** University of Padua

[02/2018] **Scholarship awarded on merit Awarding institution:** University of Padua

CONFERENCES AND SEMINARS

[17/06/2022 – 17/06/2022] **Leibniz on Numbers, Mathematics, and Physics** Online seminar

I will take part in this event as a selected speaker.

[28/03/2022 – 28/03/2022] **Material Objects** University of Italian Switzerland (Lugano)

I took part to this event as a participant.

https://www.usi.ch/en/feeds/17866

[11/11/2021 – 13/11/2021] **The Nature of Quantum Objects** Geneva

I took part in this event as a participant.

https://themetaphysicsofquantumobjects.wordpress.com/conference-the-nature-of-quantum-objects/

[03/08/2021 – 07/08/2021] **12th Ludwig Wittgenstein Summerschool** Klagenfurt

I took part in this event as a participant.

https://www.alws.at/12th-ludwig-wittgenstein-summerschool/

[27/07/2021 – 01/08/2021] **Identity: Logic and Metaphysics** Budapest

I took part in this event as a participant.

https://philevents.org/event/show/79246

[10/06/2021 – 10/06/2021] **Identity and Individuation** Saint Andrews

I took part in this event as a participant.

https://philevents.org/event/show/90246

[07/03/2018 – 23/03/2018] **Women and Mathematics** Padua

I took part in this event as a participant.

https://events.math.unipd.it/DonMat/node/1

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

DIGITAL SKILLS

My Digital Skills

Latex: advanced user | Proficient with Microsoft Office Word, Power Point, Excel, Pages , Keynote | Python: advanced user | MATLAB: advanced user | E-learning Platform (zoom Google Meets Skype Google Classroom Padlett)

DRIVING LICENCE

Cars: B