

# Rawad El Skaf

## *Curriculum Vitae*

### PhD in Philosophy

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Double Nationality: Lebanese, French



- **AOS:** General Philosophy of Science, Integrated History and Philosophy of Science
- **AOC:** Epistemology, Analytical Philosophy, Logic, Physics, Computer Science, Philosophy of Science in Practice

### Education

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- 2015-2016    PhD in Philosophy, specialty in History and Philosophy of Science  
Université Paris 1 Panthéon-Sorbonne, IHPST (UMR 8590)  
*First class honours with highest distinctions* (Mention “Très honorable avec félicitations du jury”)  
Thesis: The Structure of Scientific Thought Experiments  
Jury:    Anouk Barberousse (Université Paris 4, co-director)  
         Denis Forest (Université Paris Ouest-Nanterre)  
         Jean Mosconi (Université Paris 1)  
         John D. Norton (University of Pittsburgh)  
         Maximilian Kistler (Université Paris 1, co-director)  
         Sébastien Gandon (Université Blaise Pascal)  
Qualified “Maître de conference”, CNU sections 17 (philosophy) and 72 (epistemology, history of science)
- 2006-2011    PhD candidate in Philosophy, “allocataire de recherche” (full PhD fellowship)  
Université Paris 1 Panthéon-Sorbonne, IHPST (UMR 8590)  
Thesis: An Epistemology of Thought Experiments  
Directors: A. Barberousse, J. Mosconi  
PhD interrupted by a tragic event (late 2009, explanation annexed below)
- 2005-2006    Master of Philosophy, specialty in History and Philosophy of Science  
Université Paris 1 Panthéon-Sorbonne, IHPST (UMR 8590),  
*Magna cum laude* (mention Bien)  
Dissertation: Recent debates on Maxwell’s demon: on the search of a hidden entropic cost (16/20, *summa cum laude*).
- 2003-2004    Master (DEA-Research graduate diploma) in Networking and Telecommunication,  
Institut National Polytechnique, Toulouse, France, *cum laude* (mention AB)

- 2002-2003 Master (DESS-Specialized graduate diploma) in Computer Science, Université Nice Sophia Antipolis, Nice, France, *cum laude* (mention AB)
- 1998-2002 BSc in Computer Science, Notre Dame University-NDU, Lebanon, GPA: 2.92/4

## Grants, Prizes, Fellowships

- 2018 Junior Visiting Fellowship, University of Geneva, to work on thought experiments in quantum gravity within “Space and Time After Quantum Gravity” project led by Christian Wüthrich, 12-27 March
- 2015-2016 Young Researcher Prize, Société de Philosophie des Sciences (SPS), for “What notion of possibility should we use in assessing scientific thought experiments?” article
- 2016 Young Researcher Grant, CNFHPS, travel grant for SPS 6<sup>th</sup> congress, Lausanne, Switzerland, 29 June-01 July
- 2007-2010 Full PhD fellowship (ministry of research), “Allocataire de recherche”, Université Paris1 Panthéon-Sorbonne, Philosophy department
- 2009 Young Researcher Prize (epistemology), Fondation des Treilles, for my PhD research (10 000 €)
- 2009 Travel Grant, Thought Experiments International Workshop, Toronto, Canada, 24-26 May
- 2008 Mobility Grant, visiting scholar, Pittsburgh University, HPS department, under the supervision of Prof J.D. Norton, spring semester
- 2007 Travel Grant, Models and Simulations II (MSII) conference, Tilburg, Netherlands, 11-13 Oct
- 2007 Travel Grant, British Society for the Philosophy of Science (BSPS) annual conference, Bristol, UK, 6-7 July

## Publications

El Skaf Rawad, 2018, “The function and limit of Galileo’s falling bodies thought experiment: Absolute weight, specific weight and the medium’s resistance”, *Croatian Journal of Philosophy*, Vol. XVII, No. 52: 37-58

*The ongoing epistemological debate on scientific thought experiments (TEs) revolves, in part, around the now famous Galileo’s falling bodies TE and how it could justify its conclusions. In this paper, I argue that the TE’s function is misrepresented in this a-historical debate. I retrace the history of this TE and show that it constituted the first step in two general “argumentative strategies”, excogitated by Galileo to defend two different theories of free-fall, in 1590’s and then in the 1638. I analyse both argumentative strategies and argue that their function was to eliminate potential causal factors: the TE serving to eliminate absolute weight as a causal factor, while the subsequent arguments served to explore the effect of specific weight, with conflicting conclusions in 1590 and 1638. I will argue thorough the paper that the TE is best grasped when we analyse Galileo’s restriction, in the TE’s scenario and conclusion, to bodies of the same material or specific weight. Finally, I will draw out two implications for the debate on TEs.*

El Skaf Rawad, 2017, “What notion of possibility should we use in assessing scientific thought experiments?” *Lato Sensu, revue de la Société de philosophie des sciences*, 4(1): 19-30 (Young Researcher Prize SPS 2015-2016)

*It is usually claimed that in order to assess a thought experiment (hereafter TE) we should assess the nomological possibility, or realizability in principle, of its scenario. This is undoubtedly true for many TEs, such as Bohr’s reply to Einstein’s photon box. Nevertheless, in some cases, such as Maxwell’s demon, this requirement should be relaxed. Many accounts of TEs fail in this regard. In particular, experimental and some mental model accounts are too strict, since they always require realizability in*

principle. This paper aims at analysing the notion of possibility at play in the scenarios of scientific TEs, and sheds some new light on their nature and function.

El Skaf Rawad, Imbert Cyrille, 2013, “Unfolding in the empirical sciences: experiments, thought experiments and computer simulations”, *Synthese*, **190**(16): 3451-3474

*Experiments (E), computer simulations (CS) and thought experiments (TE) are usually seen as playing different roles in science and as having different epistemologies. Accordingly, they are usually analyzed separately. We argue in this paper that these activities can contribute to answering the same questions by playing the same epistemic role when they are used to unfold the content of a well-described scenario. We emphasize that in such cases, these three activities can be described by means of the same conceptual framework—even if each of them, because they involve different types of processes, fall under these concepts in different ways. We further illustrate our claims by presenting a threefold case study describing how a TE, a CS and an E were indeed used in the same role at different periods to answer the same questions about the possibility of a physical Maxwellian demon. We also point at fluid dynamics as another field where these activities seem to be playing the same unfolding role. We analyze the importance of unfolding as a general task of science and highlight how our description in terms of epistemic functions articulates in a noncommittal way with the epistemology of these three activities and accounts for their similarities and the existence of hybrid forms of activities. We finally emphasize that picturing these activities as functionally substitutable does not imply that they are epistemologically substitutable*

### ***Under Review***

El Skaf Rawad, revised and resubmitted, “The Structure of Scientific Thought Experiments, or an Inconsistency Revealers and Eliminators Account”, *Philosophy of Science*

*In this paper, I propose and defend a novel non-reductive, non-restrictive epistemic account of scientific thought experiments (TEs), compatible with empiricism and built on case studies from the history of physics. In it, I characterise TEs as inconsistency revealers and eliminators and argue that they share a common structure. This structure appraises TEs, qua TEs as a sui generis scientific tool (non-reductive) and accounts for unrealisable in principle TEs (non-restrictive). I will finally argue that this account is irreducible to Norton’s argument view for two reasons: (a) not all “particulars” involved in a TE’s scenario are eliminable, (b) this account does not restrict the nature of the mental processes called upon when unfolding scenarios: they could be propositional, non-propositional or even a mix of both.*

### ***Work in Progress***

El Skaf Rawad, *La structure des expériences de pensée scientifiques*. Book under contract (annexed below) to appear in 2018, Éditions Matériologiques

*Les expériences de pensée (EP) scientifiques visent à fournir de « nouvelles » connaissances sur la nature, sans toutefois la consulter. Cet ouvrage entend analyser ce pouvoir épistémique des EP, tout au moins énigmatique pour la philosophie des sciences. D’abord il décrit la nature de cette nouvelle connaissance en s’appuyant sur l’histoire de la physique ; ensuite il offre une analyse critique de la littérature ; enfin il propose et défend une nouvelle approche épistémologique des EP, qui les définit en tant qu’outil scientifique sui generis caractérisé par une structure commune. Il aborde, en particulier, la question de savoir quelle notion de possibilité est mise en jeu dans leurs scénarios.*

### **Conference and Invited Presentations**

- 2018 “The function and limit of Galileo’s falling bodies thought experiment: Absolute weight, specific weight and the medium’s resistance”, Integrated History and Philosophy of Science 7<sup>th</sup> Conference (&HPS7), Hannover, 5-7 July, Poster, *blind selection*
- 2018 “The function and limit of Galileo’s falling bodies thought experiment: Absolute weight, specific weight and the medium’s resistance”, Société de Philosophie des Sciences (SPS) 7<sup>th</sup> congress, Nantes, 4-6 July, *blind selection*
- 2018 “Thought Experiments as a sui generis scientific tool”, Société de philosophie analytique (SoPhA) 8<sup>th</sup> congress, Louvain-la-Neuve, 2-5 July, *blind selection*

- 2018 “The function and limit of Galileo’s falling bodies thought experiment: Absolute weight, specific weight and the medium’s resistance”, Society for the Philosophy of Science in Practice (SPSP) 7th Biennial Conference, Ghent, June 29-July 1, *blind selection*
- 2018 “The function and limit of Galileo’s falling bodies thought experiment: Absolute weight, specific weight and the medium’s resistance”, Canadian Society for the History and Philosophy of Science (CSHPS) Annual meeting, Regina, 26-28 May, *blind selection*
- 2018 “The Structure of Scientific Thought Experiments, or an Inconsistency Revealers and Eliminators Account”, Geneva University “lake geneva Biological Interest Group” meeting, 27 March, *invited speaker*
- 2018 “The function and limit of Galileo’s falling bodies thought experiment: Absolute weight, specific weight and the medium’s resistance”, Geneva University “Beyond Spacetime” project, 21 March, *invited speaker*
- 2018 “Scientific change without new empirical data”, Annual Philosophy of Science Conference, Dubrovnik, Croatia, 16-20 April, *invited speaker*
- 2017 “History and Philosophy of Scientific Thought Experiments”, Centre for Science Studies, Aarhus, Denmark, 22 Nov., *invited speaker*
- 2017 “The Structure of Scientific Thought Experiments, or an Inconsistency Revealers and Eliminators Account”, 9<sup>th</sup> European Congress of Analytic Philosophy (ECAP9), Munich, Germany, 21-26 Aug., *blind selection*
- 2017 “The Structure of Scientific Thought Experiments, or an Inconsistency Revealers and Eliminators Account”, Simulation and thought experiment conference, Geneva, Switzerland, 8-9 June, *invited speaker*
- 2016 “How thought experiments cause change in science”, Société de Philosophie des Sciences (SPS) 6<sup>th</sup> congress, Lausanne, Switzerland, 29 June-1 July, *blind selection*
- 2014 “Philosophical perspectives on scientific thought experiments”, The Association for the Study Of Mind (ASOM), American University of Beirut (AUB), Beirut, Lebanon, 27 November, *invited speaker*
- 2014 “Thought experiments in the philosophy of science”, philosophy department American University of Beirut (AUB), Beirut, Lebanon, 22 May, *invited speaker*
- 2007 “Thought Experiments and Computer Simulations: How Close?”, with C. Imbert, Models and Simulations II (MSII) conference, Tilburg, Netherlands, 11-13 October, *blind selection*
- 2007 “Is a successful thought experiment a ‘possible’ one?” British Society for the Philosophy of Science (BSPS) annual conference, Bristol, UK, 5-6 July, *blind selection*

## **Research Experience**

- 2018 Junior Visiting Fellowship, University of Geneva, to work on thought experiments in quantum gravity within “Space and Time After Quantum Gravity” project led by Christian Wüthrich, 12-27 March
- 2010 “Thought Experiments and Computer Simulations: Same End, Different Means?” International Workshop, organiser, member of the scientific committee with A. Barberousse, P. Humphreys and J. D. Norton, Paris, 11-13 March
- 2009 “Thought Experiments International Workshop”, organised by J.R. Brown, Toronto, Canada, 24-26 May, *invited discussant*
- 2008 Visiting scholar, University of Pittsburgh, HPS department, under the supervision of Prof J.D. Norton, Spring semester

- 2008-2011 Active member, ANR-JCJC “Compuphys: The computational turn in physics” PI, A. Barberousse, IHPST
- 2006 “Decoherence, Quantum Measurement and the Arrow of Time Workshop”, organised by G. Bacciagaluppi, Beuggen, Germany, 10-14 September, *invited discussant*

## **Teaching Experience**

- 2014-2015 Lebanese American University (Beirut, Lebanon), Humanities department  
*Introduction to Philosophy of Science*  
For *undergraduate students*, 3 credits, 42 hours
- 2010 Universidad de Chile (Santiago, Chile), Faculty of Philosophy and Humanities  
*Science and Thought Experiments*  
For *graduate students*, 40 hours, with R. González

## **Reviewing**

- Journals *Philosophy of Science*, *Topoi*  
Encyclopaedia *Encyclopédie Philosophique*

## **Languages**

- Arabic Read, Written, Spoken (Native)  
French Read, Written, Spoken (Fluent)  
English Read, Written, Spoken (Fluent)