The Balzan Prizewinners’ Research Projects:
An Overview
2018
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An Overview

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The International Balzan Foundation

The International Balzan Foundation was established in Lugano in 1956 thanks to the generosity of Lina Balzan, who had come into a considerable inheritance on the death of her father, Eugenio. She decided to use this wealth to honour his memory.

Eugenio Francesco Balzan was born in Badia Polesine, near Rovigo (Northern Italy), on 20 April 1874 into a family of landowners. He spent almost his entire working life at Milan’s leading daily newspaper, Corriere della Sera. After joining the paper in 1897, he worked his way up from editorial assistant to news editor and special correspondent.1 In 1903 editor Luigi Albertini made him managing director of the paper’s publishing house; he then became a partner and shareholder in the company. He was not only a resourceful manager but also a leading personality in Milan. In 1933 he left Italy due to ever-increasing opposition to what was left of an independent Corriere. He then moved to Switzerland, living in Zurich and Lugano. He engaged in charitable activities, supporting many worthy causes.

He officially returned to Italy in 1950. Eugenio Balzan died in Lugano, Switzerland, on 15 July 1953.2

Today, the Balzan Foundation, international in character and scope, acts jointly through two Foundations, one under Italian jurisdiction and the other under Swiss jurisdiction.

In Milan, the International E. Balzan Prize Foundation “Prize” aims to promote, throughout the world, culture, science, and the most meritorious initiatives in the cause of humanity, peace and fraternity among peoples, regardless of nationality, race or creed. This aim is attained through the annual awarding of prizes in two general academic categories: literature, the moral sciences and the arts; medicine and the physi-

cal, mathematical and natural sciences. Specific subjects for the Prizes are chosen on an annual basis.

Nominations are received at the Foundation’s request from the world’s leading academic institutions. Candidates are selected by the General Prize Committee, composed of eminent European scholars and scientists. Prizewinners must allocate half of the Prize to research, preferably involving young researchers.

At intervals of not less than three years, the Balzan Foundation also awards a prize for humanity, peace and fraternity among peoples.

In Zurich, the International E. Balzan Prize Foundation “Fund” administers Eugenio Balzan’s estate so as to place at the disposal of the International E. Balzan Prize Foundation “Prize” the necessary financial means to realize its objectives.
The Balzan Prizewinners’ Research Projects:
An Overview
For nearly three centuries, awards and prizes have been instituted by prominent academic and scientific organizations to recognize intellectual and research excellence. In fact, the first annual prize competitions of the Académie des Sciences in France were introduced in 1719. The Balzan Prize is recognized as one of today’s major international awards.\(^1\) Two features distinguish the Balzan from its cohorts: first, the fact that subject areas are deliberated on from year to year, thus ensuring that neglected or innovative fields of knowledge are recognized, and second – the motive for this publication – the research projects, to which Prizewinners must destine half of their prize, and which will preferably involve younger researchers. Established in 2001, the projects are essential to promote culture, the sciences and the most meritorious initiatives in the cause of humanity, peace and fraternity among peoples throughout the world, one of the central aims of the Balzan Foundation as elaborated by Lina Balzan.

Following the resolutions of the Board of the “Prize” Foundation, part of the Prize is subject to the availability of the Prizewinner to submit a research project (including publications, dissemination, instrumentation, etc.) to the General Prize Committee for approval. The project should preferably involve young scientists or humanists, and be carried out under his or her responsibility. Prizewinners determine the structure of the projects and designate the academic institutions which will host them; the Balzan General Prize Committee delegates one or more of its members to advise and assist the Prizewinners in project definition and implementation. Finally, the projects are intended to give an opportunity to young researchers to make an impact at the beginning of their careers, and this characteristic of the Balzan Prize clearly emerges in the Overview descriptions.

\(^1\) IREG Observatory on Academic Ranking and Excellence. IREG List of International Academic Awards, p. 3. Available at http://ireg-observatory.org/en/pdf/IREG-list-academic-awards-EN.pdf.
The projects described in this volume show a remarkable variety, ranging across all academic disciplines. In the sciences, cutting edge research has emanated from many of these endeavors, with Balzan Prizewinners’ awards supporting the purchase of laboratory equipment, developing new equipment and research methods, financing expeditions and publishing results. Likewise, in the humanities, many major works have been published, and stand as a testimonial to the value of the Balzan Prizewinners’ work. The volumes resulting from their work are currently housed in the unique library at the headquarters of the Balzan “Prize” Foundation in Milan, and can be accessed by interested academics and researchers.

To date, 30.5 million Swiss francs have been allocated by the Balzan Prizewinners to finance over sixty research projects involving a significant number of academic institutions and administrators, as well as hundreds of individual researchers in countries around the world, including Australia, Austria, Brazil, Canada, China, Finland, France, Germany, Greece, India, Iran, Ireland, Italy, Japan, Poland, Romania, Russia, Switzerland, the Netherlands, Ukraine, the UK and the USA.

I would like to convey my sincere thanks to Clarice Zdanski and all the staff at the Balzan “Prize” Foundation for their efforts in making this new edition possible.

October 2018
The Research Projects: An Overview
Editor’s Note

The fifth edition of the *Overview* reports on seventeen years of research carried out in projects designed and overseen by the Balzan Prizewinners. Many projects have concluded their research and achieved their goals; others continue to produce results and publications. Therefore the format of the previous edition has been maintained, with one part dedicated to detailed, in-depth descriptions of the projects of the past five years while another shorter section provides summaries dedicated to projects from the years before 2012. For further information on those projects, the reader is referred to the four previous editions of the *Overview*, which can be requested in paperback from the Foundation, or downloaded from the International Balzan Foundation site (http://www.balzan.org/en/publications).

As in all editions, the projects are organized according to the two subject areas in which the Balzan Prizes are awarded each year: Literature, Moral Sciences and the Arts; the Physical, Mathematical and Natural Sciences, and Medicine. Entries are listed chronologically, beginning with the most recent. The entries for each Prizewinner are organized as follows: name of project, prizewinner, year and subject area of award; adviser from the Balzan General Prize Committee (GPC); names of researchers and/ or project directors; affiliated institution(s); period foreseen for research; web links. Indices with names of the Prizewinners, GPC advisers, project directors, main researchers and affiliated institutions can be found at the end of the volume.

*Clarice Zdanski*

*October 2018*
The Balzan Prizewinners’ Research Projects:

2012-2017
Literature, Moral Sciences, and the Arts
Institutional Innovations, Gender and the Economy

Bina Agarwal
2017 Balzan Prize for Gender Studies

Balzan GPC Adviser: Marjan Schwegman
Project Partnerships: Senior, mid-career and early-career colleagues, as well as doctoral students and post-docs in India and Europe
Affiliated Institutions: Institute of Economic Growth, Delhi; Global Development Institute, Manchester, UK
Period: 2018-

Bina Agarwal is a Professor of Development Economics and Environment at the Global Development Institute, School for Environment, Education and Development at the University of Manchester, UK. She also continues to be affiliated with the Institute of Economic Growth, Delhi, at which she was former Professor and Director. She will draw on the logistical support of both institutions for taking her research forward.

Agarwal will use the Balzan Prize research funds to pursue three research trajectories under the broad theme: “Institutional innovations, gender and the economy”. Each trajectory, presented as an independent but interrelated project, will involve collaboration with young early-career scholars as well as mid-career and senior colleagues. The projects will also build research capacity among post-Masters and doctoral students by employing them as research analysts or co-partners. In addition, workshops will be organized to share project results with policymakers and civil society, so that the research can have an impact on and make a difference to people’s lives. This would also be in keeping with the larger aims of the Balzan Prize of fostering human well-being.
Project 1. Group farming and collective action theory in Asia and Europe

This project focuses on an alternative model of farming based on small farmer cooperation, and aims to break new ground in institutional analysis and collective action theory. The context is an endemic and intensifying crisis of food security, played out against the backdrop of climate change and high inequalities in land distribution.

Most farming systems in developing countries today are characterized by millions of small family farms, typically facing severe constraints in access to inputs, credit, irrigation, resource conserving technology, and markets. As a result, their productivity remains far below potential and they are unable to achieve sustainable livelihoods. Can a model based on a group approach, involving the pooling of land, labour and capital by smallholders, provide an alternative? Can it help small farmers (an increasing percentage of whom are women) overcome their input constraints, enjoy scale economies, and enhance their bargaining power vis-à-vis markets and states? In particular, can such a model outperform individual family farms in terms of productivity and profits to ensure more secure livelihoods for those involved?

This is a relatively unexplored field, since most work on collective action has focused on the governance of common pool resources and not on cooperation around private property resources and farming. Theoretically, the project will seek to extend collective action theory and provide insights on group functioning, by examining the contexts in which farmer cooperation in production emerges and is sustained. Empirically, the detailed primary data already collected by Agarwal in India, France and Romania will be analysed. In the latter two countries, the surveys were undertaken in collaboration with researchers in Europe and the UK.

Apart from fully analysing this survey material, Agarwal will extend the research to additional countries, especially in Europe and former socialist regimes, where group farming is ongoing. In addition to adding to the body of knowledge through academic publications, this subject has substantial potential for providing policy pointers to governments, international agencies and civil society on ways of improving the viability of smallholder agriculture. The results will thus be disseminated via seminar presentations and workshops.

Agarwal also plans to continue working with researchers and practitioners in the UK and South Asia, on a range of group farms that were catalysed four years ago through
Project 1: Agriculture and rural development

An action-research project in eastern India and Nepal. Agarwal’s writings influenced aspects of this project in its early stages, and she later provided direct inputs to help shape the farm structures. This project constitutes an unusual opportunity to study the process of institution change.

Project 2. Gender gaps in property ownership

The issue of women’s rights in land and property is now increasingly being recognised across nations as one of key importance for gender equality and economic inclusion, and it is part of the UN’s Fifth Sustainable Development Goal. Agarwal pioneered the research on this subject in the late 1980s through her writings, including a multiple award-winning book, *A Field of One’s Own: Gender and Land Rights in South Asia* (Cambridge University Press, 1994) covering five countries, and numerous papers. She also led a civil society campaign to amend the Hindu inheritance law in India in 2005, to make it gender equal.

Yet much more remains to be done, both in research and its application. Under the Balzan project, she will work with two early-career colleagues in India on new data sets (including land records) which can enable an all-India analysis of the extent of gender inequality in property, its regional variations, and its implications for food security, poverty alleviation, children’s welfare and women’s empowerment.

Project 3: Environment and conservation

This project will extend Agarwal’s earlier in-depth research on forest conservation and gender in new directions. In particular, she will examine the ways in which the traditional concept of sacred groves is being used by local communities in the Himalayas to create social barriers to deforestation. For this purpose, a field survey and historical research will be undertaken in collaboration with one of her doctoral students, as well as with a mid-career researcher based in a local institution and a senior colleague at the Institute of Economic Growth, Delhi.
Transnational Sites of Memory: Reconstructing Memory in the City

Aleida and Jan Assmann
2017 Balzan Prize for Collective Memory

Balzan GPC Adviser: Thomas Maissen
Project Directors: Aleida and Jan Assmann
Affiliated Institution: Kulturwissenschaftliches Kolleg Konstanz
Period: 2018-

Aleida Assmann held the Chair of English and Comparative Literature at the University of Konstanz from 1993 until her retirement in 2014. Jan Assmann held the Chair of Egyptology at the University of Heidelberg from 1972 until his retirement in 2003.

Over the last decades, the Assmanns have seen that dynamics of collective memory are more likely to be shaped by initiatives and movements from below rather than from the national and supra-national level. For this reason, their research project emphasizes European cities and local actors as the crucial context for the emergence of new memory practices that reshape collective memory and identity in the age of globalization at the beginning of the twenty-first century. Europe is chosen as a frame and context for the project due to the rich international network of experts, teams, and young researchers available. The project will begin with two Balzan Fellowship holders at Konstanz. Eventually there are hopes to finance a research group, travel stipends, workshops, a Balzan Lecture, and publications.

The project will focus on local memory initiatives and activities that are currently evolving in cities but never make it into the news, nor are they noticed and known in neighboring cities. The guiding premise of the project is that citizens today are confronted with a number of memory issues that are reflecting not only radical political changes and a traumatic history, but also cultural, social and technological changes. The city is not defined here in the usual sense as modern, progressive and urban in contrast to the country; both cities and towns in industrial and rural contexts are included in the project. Cities as well as towns can be defined as a condensation of
historical events, as a thickening and materialization of history, as tangible carriers of signs and traces that are eventually destroyed or preserved, discarded or deciphered, marked or unmarked, forgotten or remembered. The emphasis is placed on larger and smaller communities and on the various challenges that these communities face with respect to their collective memories.

Some of the case studies and relevant questions to be addressed by the project include:

- How is the collective memory of the community shaped by its architecture and built environment? How does history materialize in the city? How is it inscribed, anchored, erased, contested, transformed and renewed or reconstructed? Who are participating in these debates, who ignore them, who pay for historical transformations in the city? Which historical layers are privileged and foregrounded, and which are forgotten or repressed?

- Towns and cities are spaces where historical memory is performed, commemorated and contested. What is the role and use-life of monuments in the city? Do they reflect national standards or express local orientations? What is the impact of shifts in the frames of national memory on the local level? What happens if national memory and local memory diverge significantly?

- We have often been told that due to digital technology, the local has become globalized and the global localized. But how does this interrelation really work? To which extent is the global embraced or distanced in the community? Who has access to distant communication and uses these modalities and who does not? How are digital means used to create new collective memories on the local level?

- In a time of mass migration it is not the country as such but the city and the town to be impacted by these dramatic changes. How is the collective memory of the community affected by the arrival and presence of new citizens? Which memories do the immigrants bring with them and do they find ways and means to share them with the other inhabitants?

These and other questions may provide more insight into the complex relations between memory, space, time, and identity in times of rapid transformation. The city is an important focus of the project because it is the exemplary contact zone where people from different nations and distant cultures interact face to face. It is by no means a ‘melting pot’ but a paradigmatic contact zone where heterogeneous social and cultural imaginaries are defended, contested, communicated and negotiated in confined space.

Additional initiatives such as workshops, Balzan Lectures and publications on the Balzan research project are foreseen.
Ancient Literature: Survival and Rewriting

Piero Boitani
2016 Balzan Prize for Comparative Literature

Balzan GPC Adviser: Peter Kuon
Project Director: Piero Boitani
Deputy Supervisor for Part 1: Corrado Bologna
Substitute Project Head for Part 2: Emilia Di Rocco
Researchers: Part 1: Francesca Galli, Daria Farafonova; Part 2 Sub-projects: (1) Giulio Guidorizzi (coordinator), A.M. Bowie, E. Cook, L. Edmunds, D. Elmer, J. Portulas, C. Tsagalis; (2) A. D’Agostino (coordinator), M. Capaldo, A. Cipolla, S. Romani, S. Lunardi, F. Conca; (3) Giacomo Berchi; (4) Michele Corradi; (5) S. Halliwell, M. Fusillo; (6) Silvia Montiglio; (7) P. Fedeli (coordinator), G. Vannini, A. Fo, P. Habermehl, R. Dimundo, B. Santorelli, A. Stramaglia, A. Cafagna; (8) A. Barchiesi and L. Graverini (coordinators), W. Keulen, L. Nicolini, S. Mattiacci, I. Marchiesi; (9) F.R. Berno, R. Pierini, C. Torre, Remo Bodei; (10) M. Lapidge, P. Chiesa; (11) C. Bologna, M. Mocan; (12) F. Santi, J.Y. Tillette, I. Caiazzo, L. Pagani, M. Giani, V. Mattaloni
Affiliated Institutions: Part 1: Università della Svizzera Italiana (USI), Lugano; Part 2: Fondazione Lorenzo Valla, Rome
Period: 2017-

Piero Boitani holds the Chair in Comparative Literature at “La Sapienza” University in Rome and teaches at the Università della Svizzera italiana (USI) in Lugano. His research project on ancient literature will have two sections: 1. Beginning and Creation: Re-Writing; 2. The Survival and Rewriting of Ancient Classics.

Part 1: Survival and Re-writing of the Bible: Beginning and Creation

Institution: Università della Svizzera Italiana (USI), Lugano
The subject of Creation for two postdoctoral scholarships stems from Boitani’s long-term interest in the subject, including numerous publications. Two postdoc USI students receive a 40% scholarship for two years beginning in 2017. Work between the two postdoc students is divided as follows: 1. The theme of Creation in the fourteenth and fifteenth centuries; 2. The theme of Creation in the sixteenth and seventeenth centuries.

Most interesting developments have taken place in the first nine months of the research. Francesca Galli (fourteenth century) has found fascinating new material on literary and figurative creations of the Empyrean before Dante. ‘Scientific’ descriptions of the ‘third realm’ elaborated by Franciscan masters and preachers with great experience in the fields of optics and perspective, such as John Peckham, Bartolomeo da Bologna, Roger Marston, Matteo d’Acquasparta, and the anonymous author of the Commentary on Peter Lombard’s Sententiae of MS lat. 16407 of the Bibliothèque Nationale de France, are the most interesting instances. It is hoped that a critical edition of Bartolomeo’s work as well as of the French manuscript will eventually be produced.

Daria Farafonova (sixteenth and seventeenth centuries) has been looking at the Dantean sources of Michelangelo’s conception of the artist. A precise comparison between the painter’s Rime and his oeuvre in the Sistine Chapel on the one hand, and Dante’s Comedy on the other goes a long way to explain this conception. At the same time, Michelangelo’s “spiritualism”, his reliance on Savonarola, and Joachimite influences are capital in order to understand the relationship between human and divine creation in his ideas.

Part 2: The Classics and their Survival

Institution: Fondazione Lorenzo Valla
Coordinator: Piero Boitani (Executive Vice President and Director of the Fondazione Valla’s Classics series Scrittori Greci e Latini)
Substitute Project Head: Emilia Di Rocco (Comparative Literature, Università degli Studi di Roma “La Sapienza”)
A five-year project has started, which will lead to the publication of a series of volumes by the Fondazione Valla and Mondadori, in the series *Scrittori Greci e Latini*. It will fall into several sub-projects personally directed by Piero Boitani and entrusted to scholars worldwide for research and writing. Each volume will consist of the following: 1. drafting of the critical text and apparatus; 2. translation into Italian; 3. introduction and extensive critical commentary on the work, in the tradition of the Valla series; 4. a scholarly essay on the survival of the work (possibly incorporated in the Introduction).

**Sub-projects**

1, **Homer, Iliad.** This is a completely new edition in six volumes by an international team of younger and established scholars, coordinated by Professor Giulio Guidorizzi (Turin), who will also do the translation and write the general introduction. The editors are Professors A.M. Bowie (Oxford); E. Cook (Trinity, Texas); L. Edmunds (Rutgers); D. Elmer (Harvard); J. Pòrtulas (Barcelona); C. Tsagalis (Thessaloniki), each of whom will edit four books of the work. A seminar in which the entire team will discuss the edition and the commentary is planned for 2019 in Milan or Turin.

2, **Troy after Troy.** Two volumes coordinated by A. D’Agostino (Milan), along the same lines as *Alessandro nel Medioevo occidentale*, published by Valla in 1997. It will collect classical Greek and Latin texts later than the *Iliad*, and English, German, Scandinavian and Slavic romances from the Middle Ages to the sixteenth century. M. Capaldo (Lincei), A. Cipolla (Verona), A. D’Agostino, S. Romani, S. Lunardi (Milan) and F. Conca will collaborate on the project.

3, **Stories of Ulysses.** Edited by Piero Boitani, with the collaboration of assistant Giacomo Berchi (doctoral student at New York and Yale Universities). Three volumes that will collect works regarding the figure and vicissitudes of Ulysses after the *Odyssey*, in classical, medieval and modern literature, down to our own times, with original texts and translations into Italian, a general introduction, introductions to each work, and a commentary. The work for this volume is in an advanced state, and a great deal of material has been found in Rome and Cambridge libraries.

4, **Protagoras and Gorgias, Works.** Edited (text, translation, introduction, comment) by the young researcher Michele Corradi (Aix-Marseille).

5, **Pseudo-Longinus, The Sublime.** Text, introduction and commentary by S.
Halliwell (St. Andrews), with a long essay by M. Fusillo (L’Aquila) on the very important Nachleben of this work. The text and introduction have already been received.


7. Petronius, *Satyricon*. Two volumes, coordinated by P. Fedeli (Bari and Lincei), critical text by G. Vannini (Perugia), translation by A. Fo (Siena), commentary by P. Habermehl (Humboldt), R. Dimundo (Bari), P. Fedeli (Bari and Lincei), B. Santorelli (Bari), A. Stramaglia (Cassino) and A. Cafagna (Bari).


10. *The Martyrs of Rome*, 2 volumes edited by M. Lapidge (Cambridge), with translations by P. Chiesa (Milan). A collection of the most important stories of the Roman martyrs brought together and published for the first time in modern days, with an introduction and commentary by one of the major specialists in the field.

11. *Arks: Noah, Covenant, Memory*. Three volumes edited by C. Bologna (Scuola Normale Superiore and USI) and M. Mocan (Roma 3 and USI). Five archetypes of “arks” widely diffused in Medieval, Renaissance and Baroque culture are the focus of attention here – Noah’s Ark, the Ark of the Covenant, the Church, the Body of Christ, and “arks of memory”. The texts in the selection include (I) Ambrose, *De Noe et arca*; Hugh of St. Victor, *De arca Noe*; (II) Hugh of St. Victor, *Libellus de formatione archae*; Richard of St. Victor, *De arca mystica* I-III; (III) Richard of St. Victor, *De arca mystica* IV-V; Giulio Camillo, *L’Arca del Patto*; Athanasius Kircher, *Arca Noe in tres libros digesta*.

12. *The Poetry and Philosophy of Chartres*. The editors of this anthology in two volumes are F. Santi (Cassino and SISMEL, Florence), J.Y. Tillette (Geneva), I. Caiazzo (CNRS, Paris), L. Pagani, M. Giani, V. Mattaloni. The texts include (I) Bernardus Silvestris (*Cosmographia*), Thierry of Chartres (*Tractatus de sex dierum operibus*), Alain de Lille (*Sermo de sphaera intelligibili*), William of Conches («Animam mundi»), and (II) Alain de Lille (*Anticlaudianus* and *De planctu naturae*). Some of the texts of these volumes deal with the themes of the Beginning and of Creation.
Finally, yearly book launches in Rome are foreseen, as are one or two Balzan-Valla-Lincei Annual Lectures on the classics, European literature and the world, to be held in Rome at the Accademia Nazionale dei Lincei, and eventually in other places both in Italy and abroad. The first two Balzan-Lincei-Valla Lectures were held at the Accademia dei Lincei in Rome on 23 November 2017 by Peter Dronke (Cambridge) and Piero Boitani (Sapienza), and are being published by the Edizioni di Storia e Letteratura. Silvia Montiglio (Johns Hopkins, Baltimore) and Alessandro Schiesaro (Manchester) will hold the second set of these lectures on 29 November 2018.
Climate change is one of the most important long-term problems facing the world as a whole, but social scientists do not know as much as they should about the conditions under which governments take it seriously, and what leads them to pursue one set of policies or another. Moreover, a satisfactory understanding is lacking as to why some other organizations – provinces, cities, or corporations, for example – adopt pro-active climate change or energy policies while others do not. This project seeks to develop systematic knowledge about the sources of variation in climate policies and outcomes, and to galvanize a neglected field of political science: the comparative politics of climate change policy. Motivated and funded by Keohane’s Balzan Foundation Prize in International Relations: History and Theory (2016, awarded 2017), the project is being conducted under the auspices of the Social Science Research Council Working Group on Climate Change and the Center for Advanced Study in the Behavioral Sciences, Stanford University, with administrative support from Princeton University.
Designed to be *non-hierarchical and collaborative*, Keohane’s role is to convene a group of scholars working on climate change and/or comparative politics; set the agenda for the initial meeting; offer advice and guidance to the scientific investigators; and decide which projects that emerge should be funded and at what level. The investigators will have constructed their own theories and hypotheses, and will use methods that they find appropriate, as long as they are social scientific and comparative. They will publish their work under their own names and with collaborators of their own choosing. They will also commit to freely sharing their ideas and findings with other members of the research group.

Although guided by theory, the project is also deeply empirical. It is *evidence-based social science*, conducted according to scientific principles that require specification of theory, deriving the observable implications of theory, specifying hypotheses that embody these observable implications, and testing the hypotheses with relevant data, which may be qualitative as well as quantitative.1 Moreover, while motivations are to a great extent normative, the research itself is positive, and could involve any kind of social scientific method, ranging from agent-based simulations to experimental work, statistical modelling and data analysis, comparative case studies, and ethnography.

**The CASBS Workshop**

As a first step, a workshop was convened at the Center for Advanced Study in the Behavioral Sciences, Stanford University, on April 19-21, 2018. The core group consisted of thirteen young scholars of comparative politics and/or climate change:

Sarah Bush (Temple University)
Jared Finnegan (London School of Economics)
Nikhar Gaikwad (Columbia University)
Federica Genovese (Essex University)
Jessica Green (New York University)
Jennifer Hadden (University of Maryland)
Thomas Hale (University of Oxford, *Deputy Supervisor*)
Sol Hsiang (University of California, Berkeley)

Phillip Lipsy (Stanford)
Paasha Mahdavi (Georgetown University)
Florence Metz (ETH Zurich)
Nick Obradovich (MIT)
Dustin Tingley (Harvard University).

The following senior scholars participated in the meeting, offering commentary and advice:

Bruce Cain (Stanford University)
Margaret Levi (Director, CASBS, and Stanford University)
Michael Ross (UCLA)
Ken Scheve (Stanford University)
Michael Tomz (Stanford University)
David G. Victor (UCSD).

In addition, Arjuna Dibley, a PhD student at Stanford, acted as secretary.

Memos and papers were circulated among group members before the workshop, at which there were no formal presentations. Extensive, intense discussions of the issues raised in the memos focused on how to initiate research that meets contemporary political science standards of descriptive and causal inference, while illuminating issues related to the comparative politics of climate change, in particular: issues related to uncertainty and risk; the distinctive problems of taking action on very long-term public policy issues; and the political barriers to fundamental political-economic changes such as those that would be involved in deep carbonization. Issues of complex interdependence in transnational and international climate politics were addressed, as were institutional variations among democracies that affect climate policies and outcomes and differences both between autocratic and democratic government actions with respect to climate change and among autocratic governments.

The following questions were discussed in great detail. Some of these questions emerged in different forms in the research projects devised in the course of the workshop; others remain for investigation in the future, or by others.

- What is the impact of institutional variation in democracy? This theme includes considering the following issues:
- Through what channels and under what conditions (for instance, of climate salience) do public attitudes on climate have an impact on climate outcomes?
- What are the motivations of democratic governments?
- How do policy outputs become policy outcomes?

- The impact of global interdependence on climate change policies, with reference especially to:
  - Roles of state and non-state actors, including sub-units of states and business firms, as well as NGOs.
  - Institutional competitive advantage, varying by unit depending on their capabilities and vulnerabilities.
  - How do transnational ties and transnational actors affect state policies?

- Distributional/re-distributional politics. Under what conditions do societies compensate losers? How relevant is the Coase Theorem, and how difficult is it to make commitments credible?

- Time horizons and discount rates. Which actors have long and short time horizons? Do these vary between firms or because of institutions? Research could examine asset revaluation, focusing on investors and insurance companies.

- Efforts to affect individual behaviour – under what conditions can long term changes in behaviour be induced?

- What ways are climate politics similar and different in democratic and authoritarian contexts? How do different types of authoritarian regime differ in their climate policies?

- Integrated assessment models. What assumptions of these models should be interrogated by political scientists? How can they be modified while keeping models tractable?

- Politics of decarbonisation. What can be learned by looking at previous disruptive transformations of major political economies in the past – such as the effects of the internal combustion engine – about the disruptions that would be associated with thorough decarbonisation?

- What is the difference for the politics of climate change between adaptation and mitigation?

- What is the impact of domestic accountability on diffusion of policy? Does accountability inhibit diffusion?
Specific Research Plans

On the final day of the workshop three groups were formed, each of which outlined a specific research project on the comparative politics of climate change:

1) A comparative study of countries’ responses to shocks (1973, Fukushima), focusing on the UK, France, Germany, and Japan. In general, under what conditions are rapid transitions observed? Increasing returns as a result of original government investment, then tipping points? Key issues here are time horizons – different actors will have different discount rates. Government may need to have the longest time horizons and the greatest tolerance for uncertainty. What are the drivers, and what are the blockers, of rapid and radical change? What are the democratic politics of massive initial investment by the state, then generating market incentives? Do the authoritarian politics of response to shock differ from the democratic politics of such responses? What are the factors that enable governments to maintain vigorous energy or climate policies over an extended period of time? Participants: Jared Finnegan (LSE), Phillip Lipscy (Stanford), Florence Metz (ETH, Zurich).

2) A comparison of oil majors’ efforts toward reducing their carbon footprints, or even decarbonisation, seeking to explain variation among firms’ actual (rather than symbolic) policies. Potential explanatory variables include the following: dependence of the firm on oil as opposed to gas or other energy sources; past history and organizational culture; location of headquarters; markets in which the firm sells its products; regulatory pressures and strategies in the past toward them; competitive situation; whether publicly traded; shareholder pressures; social movement pressures. Relevant frames: varieties of capitalism, pluralist theory; politics of regulation; work on corporate codes of conduct. Participants: Sarah Bush (Temple), Jennifer Hadden (University of Maryland); Thomas Hale (Blavatnik School, Oxford); Jessica Green (University of Toronto).

3) Survey experiments to look at how individuals in communities vulnerable to both climate and decarbonisation regulatory shocks (e.g. Louisiana delta oil drillers) address distributional issues and varying time horizons associated with choices among resistance, mitigation, adjustment, and adaptation options. Participants: Nikhar Gaitwad (Columbia); Federica Genovese (Essex); Paasha Mahdavi (Georgetown); Nick Obradovich (MIT); Dustin Tingley (Harvard).
These projects are currently defined in tentative ways and can be expected to be revised and to proceed in new directions as research proceeds. As is usual in innovative research, the list of participants for each project may also change. By 2020, the project is expected to produce publications improving our knowledge of the comparative politics of climate change policy and helping to institutionalize this subject as a sub-field of political science and an important component of climate change studies. Keohane will maintain close contact with each group, and a follow-up meeting at CASBS has already been arranged for 21-23 February 2019, with presentations of research designs and preliminary findings.
Iconic Presence: The Life of Images in Religion

Hans Belting

2015 Balzan Prize for the History of European Art (1300-1700)

Balzan GPC Adviser: Victor Stoichita
Project Directors: Sigrid Weigel; Klaus Krüger; Ivan Foletti
Balzan Fellows: Johanna Abel, Henry Kaap, Zuzana Frantová
Participating Institutions: Zentrum für Literatur- und Kulturforschung, Berlin; Center for Advanced Studies BildEvidenz, Freie Universität Berlin; Center for Medieval Studies, Department of Art History, Czech Masarykovy University, Brno
Period: 2016-

Hans Belting is Emeritus Professor for Art History and Media Theory at the Staatliche Hochschule für Gestaltung Karlsruhe.

Iconic Presence: The Life of Images in Religion concerns the central role of images in religions and the significance of material practice in religion, which have become major topics in the field of religious studies as a result of notions like “Iconic Religion” (a project at the University Bochum), “Visible Religion” (the title of a journal of the 1980s at the University Groningen), or “mediation and genesis of presence” (Birgit Meyer, 2012 inaugural lecture, University of Utrecht), not to mention Belting’s own attention to notions of Likeness and Presence (as in the title for the English edition of Bild und Kult). The iconic production and ritual enactment of images differ significantly between different religions, focusing the gaze on the specific nature and history of each; likewise, the contemporary significance of religion differs from culture to culture. Therefore, the modern experience of religion, which derives from the Enlightenment, must be re-evaluated in order to understand images in religions other than Christianity.

Presence is today recognized as a category beside and beyond representation. Moreover, as agencies of representation or iconic presence, pictures need a material presence. But presence in our case means real presence of the one who is represented in a picture. Real presence, as a stage beyond iconic presence, accordingly was seen as a miraculous intervention of the holy in a material picture. An embodiment of the invisible seemed to transform pictorial matter into a live image.
The history of the long competition between *iconic presence* and *sacramental presence*, between the ‘Vera Icon’ and the Eucharist, has not yet been written. From the thirteenth century onward, it was a driving force that left many traces on both sides. The production of presence as an ‘immediate’ esthetic experience has become a hotly debated topic in today’s humanities as a posthermeneutic phenomenon (H. U. Gumbrecht). The religious realm needs another discussion, as is conducted in anthropology and religious studies (B. Meyer). Whereas art history remains object-based and concentrates on the inborn (visual) qualities of the material picture (or artwork), the concept of *real presence* requires a new attention for the role of ‘mediation’ of images by the religious authorities in charge.

**RESEARCH PROGRAM: RESULTS AND PLANS**

The funds of Hans Belting’s Balzan Prize offer support to young scholars to do research on images and to involve literary or cultural studies as well as religious studies. For this purpose, Belting has initiated cooperative programmes with three different institutions which will address the project from their different perspectives. In the Zentrum für Literatur- und Kulturforschung in Berlin (ZfL), the former director, Sigrid Weigel (*Grammatologie der Bilder*, 2015), renowned for her work in image theory, is a partner in the project. The subject of religion is well established at the ZfL, as can be seen by the work of Martin Treml. A postdoctoral position (50%) for three years has the task of cooperating with the two other institutions in organizing conferences, seminars, and publications. Secondly, the programme Research Group Evidence of Images has been instituted at the Free University in Berlin, where Belting is an elected Fellow. The Berlin project is directed by the art historian Klaus Krüger (*Grazia: Religiöse Erfahrung und ästhetische Evidenz*, 2016), who is known in the field of image theory. A PhD position (50%) for three years coordinates research in conjunction with the other two institutions. The third institution is the Center for Medieval Studies in the *Seminar dejin umeni* (art history) at the Czech Masarykovy University in Brno, where art historian Ivan Foletti, editor of the international journal *Convivium*, author of *Zona liminare. Il nartece di Santa Sabina a Roma* (2015), and lecturer at Brno and at the University of Lausanne, heads the project. A postdoctoral position (100%) with emphasis on late Antiquity and the Middle Ages in East and West has the task of broadening the perspective of the project in the spatial and temporal sense.
In 2017, the three institutions that host the project initiated a newsletter with the intention of offering information about the ongoing research of the individual projects of the three Balzan fellows, Johanna Abel, Henry Kaap and Zuzana Frantová, and the related activities on a regular basis. A workshop was held in Brno from November 27 to 28, 2017.

Plans for 2018 include a workshop on “Presence” at BildEvidenz, followed by another on “Performativity and Image in Iconic Presence” at ZfL for the fall/winter.

**INDIVIDUAL RESEARCH PROJECTS**

**Johanna Abel (ZfL Berlin)**

The project “Corporeal Presence in the Hispanic Cult Drama or Auto sacramental” began with Abel’s attending the Corpus Christi procession in Seville, Spain, after which she contributed a short note on *What is an Auto Sacramental?* as well as notes on the Spanish image cult today to the *Iconic Presence* newsletter. Thus, once the ritual practice of ‘Corpus Domini’ had been introduced in a diachronic perspective, the ZfL group dedicated a reading session to Victor Turner’s *From Ritual to Theatre* (1983), a work that has known recent actualizations in religious studies, theatre, performance and medieval studies. The discussion of Turner’s conceptualizations of dramatic ritual and ritual drama with Hans Belting and Martin Treml helped to establish the theoretical framework of the subject. The development of the project was also shared with the ZfL fellows of the research area *World Literature* in a January 2018 session.

Abel’s paper, “Images on Stage. Sacramental Theatre Representation in the Hispanic *Auto alegórico* (1616-1689)” led to fruitful discussions about auratization and the dynamics of early modern affect control. The project focused on Spanish sacramental plays and the iconology of the Baroque period (1600–1700). In these *Autos sacramentales* the sacramental host of the Eucharist was put on public display in a multimedia spectacle. Connecting theology and poetry, the drama texts demonstrate how literature generated presence in its own way. First, images were carried around in the Corpus Christi procession. Afterwards, poetical *conceptos* were animated on stage and performed as speaking and bodily enacted allegories. In a continuum of *iconic presence* (images), *real presence* (the consecrated host on display) and *copresence* of the public with the actors performing sacred figures, ritual and theatre were entangled in a constant media alternation to transfer immanence. In order to compensate the
invisibility of Christ’s body in the host and the lack of life in material images, the event mutually potentiated each category in the production of presence. To explore the reciprocity of these two modes of mediation, the project focuses on three plays that demonstrate how an embodiment of allegories served to represent the unrepresentable body of Christ in the host. The sources are both the drama texts and stage instructions (memorias de apariencias) documenting the effects and efficiency of ‘presence machines’. Further archive material helped to elucidate the pre-modern stage practice. Calderón’s The True God Pan (1670) employs prefiguration, incorporation in personae dramatis (e.g. “La Idolatría”) and trans-figuration of images on stage. Thus, the picture of a lamb turns into a sculpture of the Immaculate Conception in order to exemplify a poetics of transubstantiation.

**Henry Kaap (FU Berlin)**
The project is concerned with the period when the religious presence or real presence in medieval images turns into the aesthetic presence of Renaissance art. High Renaissance paintings by Raphael and Titian that are recognized as masterpieces today were famous as agents of miraculous power in their own time. Thus, two kinds of experience seem to clash: the belief in heavenly intervention and the impression of visual efficacy. The Reformation, which led to demolishing church inventories and destroying cult images, was paralleled by the coming into existence of art collections outside the religious space, a movement that was followed by a new kind of art literature.

How do these phenomena add up? To answer such a question, the project would like to readdress the interrelation between the religious experience of presence and the visual/bodily presence in an artwork. The research project interprets the San Rocco Christ Carrying the Cross (attributed to Titian or Giorgione) as a contribution to a longer history of artistic reflections on religious presence and the visual or bodily presence in an artwork. Therefore, the task at hand is to analyze its aesthetic structure and to contextualize it not just in its historical setting as a miraculous image but also within the broader frame of the Balzan project. Kaap investigates how this painting was – literally and metaphorically – reframed as a ‘miraculous image’ within the Church of San Rocco. From 1520 onwards, immediately after the first healing miracles had occurred, the adjacent Scuola Grande di San Rocco did not just adjust the interior setting of the Church to guarantee a prominent visibility of the Christ Carrying the Cross next to the main chapel, the Scuola also started to promote the new cult that arose around the painting by sending out printed woodcuts, which resulted in an even bigger flow of incoming pilgrims. While the prints promoted the miracles of
the painting, the newly added lunette – showing God the Father with Angels Carrying the Arma Christi – on a pictorial level created an interconnection between the Christ Carrying the Cross and the other sacred objects owned by the Scuola Grande di San Rocco. Further artistic and poetic responses to the miraculous agency of the painting are Eustachio Celebrino’s treatise Li stupendi et maravigliosi miracoli del glorioso Christo di San Rocco (ca. 1523) as well as Pordenone’s decorations of the church (ca. 1527), which depict a stream of pilgrims bearing votive offerings and directing their sole attention towards the miraculous San Rocco Christ. The study of the aforementioned artistic articulations in relation to the example of the Christ Carrying the Cross will lead to a better understanding and further discussion of the intertwined relationship of ‘iconic presence’ and ‘real presence’.

Ivan Foletti (Masaryk University, Brno)

After finishing their field workshop Walking to Places and Living Images in France in early summer 2017, Ivan Foletti and his research group returned to Brno and continued their work at the Center for Early Medieval Studies. Reintegration into static structures was more difficult than the team had expected after having walked for four months.

Meanwhile Zuzana Frantová (media coverage and support from Masaryk University) closed the first phase of her sub-project “Liminality, Embodiment and Iconic Presence. Serial Images in French Pilgrimage Churches” by drawing a clear conceptual outline of her research subject. This resulted in a new exposé, which was also sent via the Iconic Presence newsletter. The contribution of Foletti’s research team to Belting’s Balzan project is connected with the Brno experimental program of “Migrating Art Historians”, which is meant to introduce an aspect of body experience into the approach to pilgrimage art from an anthropological point of view. Having experienced the effects of pilgrimage on the human body, they pose the question of how far “Iconic Presence” as an aesthetic experience can be biologically facilitated by specific body techniques, for instance regulating human endorphin flow.

Zuzana Frantová (Masaryk University, Brno)

In this specific conceptual frame, the common denominator of Zuzana Frantová’s project is the rhythm of visual information that the pilgrim encounters on the journey to Santiago de Compostela. The eleventh and twelfth centuries witness the depiction of Theophany on the portal tympana of the important pilgrimage churches through the subject of Christ in glory, which in previous periods was located only in the
apse. The new way of transmitting the message has been explained by the promotion of the Gregorian Reformation, or the struggle with the new heresies (Manicheans, Cathars). The phenomenon of pilgrimage churches is commonly explained as a new visual culture that connects one church with the other. Frantová’s project focuses on the personal experience of the participants by employing two basic anthropological concepts: liminality and embodiment. In her project, the desire of *Iconic Presence* is studied as a body experience in a series of visits of the same Theophany image.

**WORKSHOP**

**Brno, November 27-28, 2017**

The year 2017 opened with the January workshop *Iconic Presence, Real Presence and Sacred Art* at the Center for Advanced Studies BildEvidenz, Freie Universität Berlin, and closed with another workshop organized by the Brno research team from the Center of Early Medieval Studies. Within the project the complex anthropological phenomenon of *Iconic Presence* is defined as a claim to experience the real presence of an invisible world via the iconic presence of artifacts. In this view, the emphasis is placed on the beholder. This emphasis on the viewer was also the topic of the workshop *Walking to Places of Iconic Presence* in the Hans Belting Library at Masaryk University in Brno. The papers presented there asked questions about whether the movement of the beholder/pilgrim to distant sanctuaries had an influence on what iconic presence might be. In the introduction, Ivan Foletti formulated the conference’s main interests: firstly, the aspect of movement and its role in the experience of *iconic presence*, which happens in proximity to the *real presence* of relics, thus implying the existence of a dialogue or dance between these two presences. Hans Belting discussed a ‘modern’ portrait of Christ invented in the 1430s for the court of Phillip the Good, duke of Burgundy.

The papers which followed were derived from the results of the experimental project “Migrating Art Historians”, initiated by the Center for Early Medieval Studies. Its aim was to study artistic monuments through physical experience. Within this project the students walked 1500 km through France to explore their own perception of the medieval pilgrimage architecture. As one of the participants of this pilgrimage, Martin Lešák (Masaryk University, Université de Poitiers) reflected on the possible capacity of architectonical silhouette in the landscape to evoke presence, not only proving this hypothesis by the example of Mont Saint-Michel, but also outlining the wider apotropaic potential of the site by the engagement of other senses, e.g. hearing, and movement.
Katarína Kravčíková (Masaryk University), also a “migrating art historian”, focused on the maintenance of presence outside the physical object itself through the architectonical disposition of space and through collective memory. Zuzana Frantová (Masaryk University) came back to specific objects, examining the anthropological effect of the depiction of Theophany, which is repeated on the portals of pilgrimage churches of the eleventh and twelfth centuries. Through the example of the famous reliquary of St. Foy, Ivan Foletti (Masaryk University, Ca’ Foscarì University, Venice) demonstrated several ways of making this saint ‘present’. Adrien Palladino (Masaryk University, University of Fribourg) finished the Monday sessions by presenting the covered portal of the cathedral of Lausanne (added to the original structure in the years 1225–1235) as a liminal space leaving an exceptionally intimate impression on the beholder due to the close dimensions and the positions of the statues all around the inner perimeter of the structure. Ondřej Jakubec (Masaryk University) launched the next morning session with a paper focusing on the Moravian baroque pilgrimage and normative texts of re-catholization, indicating the impossibility of the complete reconstruction of the experience of an ‘ordinary’ pilgrim because of the nature of accessible written sources which are all products of the church elites and thus only represent an ideal practice. Bissera Pentcheva (Stanford University) showed that it is possible to partly bring this individual experience of the pilgrim closer through the study of all the sensual impetus affecting the beholder – not only of an image, but also of light, music and movement in space. In the context of late antique sacral architecture, Vladimir Ivanovici (Masaryk University) further developed the concept of ‘performative iconicity’ in the structuring of the space and the hierarchizing of the figure of the bishop, evoking his assimilation with the image of the God in the apse. The effect of the change of spatial disposition on the contemplation of holy places was the topic of Michele Bacci’s paper (University of Fribourg) on the Basilica of Nativity in Bethlehem. Johanna Abel (ZfL Berlin) devoted her paper to the theatralization of the sacrament in the feast of Corpus Christi in baroque Spain, analyzing the dramatic elements of an image procession and the ritual elements of religious drama – the early modern auto sacramental – both staging the Eucharist. Her aim was to show how ‘walking images’ and stable images, which become embodied and alive on stage, interact with each other to produce presence on multiple levels. Martin Treml (ZfL Berlin) concluded the conference with a presentation questioning the liminal phase as an anthropological concept by Victor Turner (The Ritual Process: Structure and Anti-Structure, Ithaca 1969). He then introduced the ‘techniques of the body’ (Marcel Mauss) to characterize the experience of the pilgrim in terms of a unique practice that can facilitate presence. The workshop concluded with a resolution to organize a follow-up conference in Berlin to carry on this interdisciplinary project.
Global and Quantitative Economic History

Joel Mokyr

2015 Balzan Prize for Economic History

Balzan GPC Adviser: Thomas Maissen
Project Directors: Joel Mokyr, Louis Cain, Joseph Ferrie
Researchers: Michael Andrews, Nicola Bianchi, Luca Bittarello, Jamie Daubenspeck, José Espin, Carola Frydman, Yutaro Izumi, Riccardo Marchingiglio, Natalya Naumenko, Aniket Panjwani, Yannay Spitzer, Mara Squicciarini, Taco Terpstra, Marlous van Waijenburg, Anthony Wray, Heyu Xiong, Yiling Zhao, Ariell Zimran
Affiliated Institution: Northwestern Center for Economic History
Period: 2016-

Joel Mokyr is Robert H. Strotz Professor of Arts and Sciences and Professor of Economics and History at Northwestern University, Evanston IL, and Sackler Professorial Fellow at the Eitan Berglas School of Economics at the University of Tel Aviv. The entire second half of his Balzan Prize was allocated to the training and research of younger scholars, and would be channeled through Northwestern’s Center for Economic History, directed by himself and Joseph Ferrie. The Center was set up in 2012 with very limited seed money from Northwestern University, and the Balzan Prize enables it to continue this funding at a higher level. In addition to supporting graduate students, the Balzan funds are being used to support other young investigators from all over the world who are affiliated with the Center, including junior faculty at other universities who recently graduated from Northwestern. More specifically, Mokyr’s plans include supporting the graduate students’ and young investigators’ travel to libraries and archives, employing undergraduate research assistance, purchasing and processing data, travelling to conferences, and attending local seminars and workshops.

In addition, postdoctoral fellowships in Economic History have also been established, with requirements for candidates to spend a full year at Northwestern in the Economics or History Department engaged in research under Mokyr’s supervision. Part of the position entails teaching one or two courses in global and quantitative economic history.
The Center may also help fund data collection systems, specifically maintaining and extending a data transcription system named d’Entry, originally developed by Dr. Roy Mill at Stanford. This program is critical to the “big-data” projects currently in progress or planned by Northwestern students and recent graduates. It allows an easy and fast transcription of quantitative information from sources such as Ancestry.com and the US Census into machine-readable databases.

Mokyr’s Balzan funds are also being used for two other purposes. First, a week to ten-day residency at Northwestern for a distinguished scholar, wherein he/she interacts with the graduate students and the postdoctoral fellow, engaging in discussions and providing them with in-depth advice on their research projects. The senior scholars will be designated as Balzan Visitors. Second, two small international conferences in economic history – officially designated as Balzan Conferences – are to be held on the Northwestern campus; they will include keynote addresses by distinguished scholars.

Postdoctoral Fellows

During the academic year 2016/17, postdoctoral fellow Mara Squicciarini’s stipend and research were paid for with Balzan funds. Squicciarini was continuously advised by members of the centre, which resulted in her very successful job market paper “Devotion and Development: Religiosity, Education, and Economic Progress in 19th-Century France”, which resulted in tenure-track academic offers from SciencePo (Paris), the University of Warwick, the University of British Columbia, Northwestern University and Bocconi University.

For the academic year 2017/18, the Center appointed two postdoctoral fellows, Michael Andrews, who completed his doctoral studies at the University of Iowa and is working on the economic history of innovation in the United States, and Melanie Meng Xue, who holds a doctorate from George Mason University and is working on the economic history of China. Andrews spent one year at Northwestern as a pre-doctoral student, and his work was supported in part by Mokyr’s Balzan Prize.

Graduate Students

The area of economic history at Northwestern is attracting a significant number of PhD students from both the Economics and the History Departments, whose work is
being supported by Mokyr’s Balzan research project through the Center for Economic History. Some of them have already completed research papers and dissertation chapters in which the financial support of the Balzan Foundation is being acknowledged. Marlous van Waijenburg, PhD student, History, is completing a PhD dissertation on the development of fiscal capacity in Africa in the twentieth century, and assumed a position at the prestigious Society of Fellows at the University of Michigan in September 2017. Natalya Naumenko, PhD student, Economics, is completing a PhD dissertation on the economic and demographic effects of Soviet collectivization in the 1930s. Heyu Xiong, PhD student, Economics, is working on a dissertation on the economic history of mass communications, and has completed a number of papers with the acknowledged support of Balzan funding. Aniket Panjwani, PhD student, is working on the economic history of the US newspaper industry and changes in its organization in the twentieth century. Yiling Zhao, PhD student, Economics, is working on the economics of education and religion in nineteenth century America. Luca Bittarello, PhD student, Economics, is working on a dissertation dealing with the economics of labour conflict and unionization in the US economy in the late nineteenth century. Jamie Daubenspeck, PhD student, Economics, is working on a dissertation involving the social and economic organization of nineteenth century Egypt. Riccardo Marchingiglio, PhD student, Economics, is in the early stages of a dissertation involving the political economy of Italian election law changes in the nineteenth century. Yutaro Izumi, PhD student, Economics, is in the early stages of writing a dissertation dealing with social capital and the political economy of Meiji Japan.

Faculty and Visitors

With the help of Balzan Funds, the Center has supported the research of Assistant Professor Taco Terpstra of Northwestern’s Classics Department, who is completing a book on the connection between institutional development and trading patterns in the Mediterranean in the ancient world. In addition, the Center will host Professor José Espin from Yale University next year. A former Northwestern Economics graduate student, Ariell Zimran (who finished his degree in 2016, and is now an Assistant Professor at Vanderbilt University), was also supported by funding from Mokyr’s Balzan Prize during his work at Northwestern, and this support is acknowledged in a paper.

Professor Mokyr’s book, A Culture of Growth (Princeton University Press, 2017), in which the support of the Balzan Foundation is acknowledged, has already received
a substantial number of highly positive reviews, including the leading journals The Economist, Foreign Affairs, and Science.

Support and administration

Balzan funds have also enabled the Center to hire a full-time Research Assistant, who supported the research of both faculty and graduate students. It is currently searching for a part-time administrator who will help with the administration of its rapidly growing activities.

Conferences

With funds from Mokyr’s Balzan Prize, two conferences were organized at the Northwestern University campus. In November 2017, there was a conference commemorating the hundredth anniversary of the October Revolution in Russia. During the conference, economic aspects of the communist economies were discussed, with the participation of some of the world’s best known experts on the economic history of the Soviet Union.

Another conference will be organized around the manuscript of a new book on States and Societies written by leading economists Daron Acemoglu and James Robinson.

In summary, the Center for Economic History at Northwestern funds, supports and guides the work of young Researchers: six current PhD students, three Northwestern recent graduates, the resident postdoctoral fellow and three Assistant Professors, one in the Classics Department and the two others in the Kellogg School of Management. Their work will lead to the construction of historical databases, completed PhD dissertations, and the publication of articles in refereed journals and books. These publications will acknowledge the support of the Balzan Foundation. All research projects funded by the Balzan Foundation via the Center for Economic History will be carried out by young researchers under the direction of the Prizewinner, Professor Joel Mokyr. Professors Joseph Ferrie (a Professor in the Economics Department) and Louis Cain (an adjunct Professor in the Economics Department) will serve as deputy supervisors, assisting in project implementation and assuming an active role in coordinating research presentations.
Ian Hacking is University Professor Emeritus at the University of Toronto. The aim of his *Balzan Styles of Reasoning* research project is to contribute to his important and ground-breaking work through the support of young researchers, conferences, travel and publications. Although Professor Hacking’s work covers a tremendous range, it is united by a single concern. He shows how our contemporary investigations of nature and of ourselves – our sciences, mathematics, philosophy, and definitions of chance, illness, and the self – have been shaped by our concepts and their histories. Hacking’s socio-historical-philosophical examinations of the rise and fall of different styles of reasoning have had a lasting impact on all the major domains of inquiry: science, social science and humanities. His work demonstrates his mastery of the formal techniques of logic and confirmation theory, as well as his tremendous learning in contemporary science and its history. It has led to the introduction and elaboration of new conceptual structures; distinctive ways of understanding the possibility and growth of knowledge; and new understandings of the relation between thought, language, and cognition.
The *Balzan Styles of Reasoning* research project allows emerging scholars to continue to explore styles of reasoning in the wide range of topics dealt with by Professor Hacking: medicine, psychiatry, sociology, philosophy of mind, epistemology, philosophy of science, philosophical psychology, statistical inference, the philosophy of mathematics and logic, ethics, the philosophy of language, and history. In order to continue to advance the overarching project, detailed studies of different kinds of reasoning and inquiry are conducted. In each of the years of the project, funds are made available to support doctoral students, designated “Balzan Styles of Reasoning Graduate Fellows”, so that they can explore a style of reasoning in depth. The plan is to support at least one graduate student in each of the philosophical areas most centrally connected to the project: The Philosophy of Mind, Epistemology, Philosophy of Science and Mathematics, and Social and Political Philosophy. Funds are also made available, via travel fellowships, to support graduate student members of the Styles of Reasoning community to disseminate the results of their research. In addition, for each of the four years of the project, money will be made available for one or more visiting international graduate students writing dissertations in relevant areas to further enrich the University of Toronto community of scholarship on Styles of Reasoning.

In 2016-17, the Balzan Styles of Reasoning Project at the University of Toronto supported ongoing Balzan Graduate Fellows with major scholarships, incoming Balzan Graduate Fellows with major scholarships, and Balzan Travel Fellows with more modest sums to cover the costs of their research and travel. One of the Balzan Fellows, Johanna Thoma, has had outstanding success. That success would not have been possible without the Balzan funding, as it was used to support her during a research trip at Stanford, which launched her career. Her accomplishments have provided international recognition of the Balzan Styles of Reasoning project.

In the fourth year of the research program, an international conference will be held in which students who have contributed to the Styles of Reasoning project will return to the University of Toronto to report on the results of their research. Whereas the precise organization of panels for the conference will depend in part on the specific research areas of the students working in them, a major two-day conference is planned, with principal papers presented by students who have worked in the Styles Project and commentaries by more established but still relatively junior researchers.
Balzan Styles of Reasoning Fellowships

2018-2019 Incoming Balzan Styles of Reasoning

Jack Beaulieu  
Jovy Chan  
Alexandra Gustafson  
Shiying Li

Jack Beaulieu (BA, Philosophy, UBC) works on epistemology and epistemology and philosophical methodology, and argues that philosophical methodological reflection suffers from ignorance of non-Western philosophical methods. His work promises new challenges and insight into philosophical methodology and styles of reasoning.

Jovy Chan (BA, University of Hong Kong; MA Chinese University of Hong Kong) is interested in the metaphysics of free will and legal philosophy. Her work challenges reasoning that philosophers have used to argue against the view that free will and determinism are compatible and explains how subtle shifts in context obscure fallacies in reasoning about free will.

Alexandra Gustafson (BA Wooster College, MA Brandeis University) is an eclectic philosopher working on the nature of romantic love and the emotions more generally, mathematical logic, and the role of poetical forms in philosophical argument and methodology.

Shiying Li (BA University of Madison, Wisconsin, MA University of Chicago) is a philosopher with a background in philosophy and psychology. Her work on moral and political philosophy includes a project on the role of emotions in moral decision-making and practical reasoning.

2017-2018 Graduate Fellows

Caroline Blaney  
Caitlin Hamblin

2017-2018 Balzan Styles of Reasoning Travel Fellowships

Michael Blezy
Lu-Vada Dunford
Michaela Manson
Robbie Matyasi
Matthew Wurst
Robert Mason
Jessica Wright
Michael Szlachta

2015-2017 Balzan Styles of Reasoning Graduate Fellows
Melissa Rees
Natalie Helberg
Maria Keller

2016-2017 Balzan Styles of Reasoning Travel Fellowships
Griffin Klemick
Michaela Manson
Rory Harder
Hamish Russell
Owen Pikkert
Robert Mason
Damian Melamedoff
Dominic Alford-Duguid
Roberto Granier

2015-2016 Balzan Styles of Reasoning Graduate Fellows
Maria Keller
Melissa Rees
David Suarez
Zachary Irving
Natalie Helberg

2015-2016 Balzan Styles of Reasoning Visiting Fellows
Kristina Pucko
Taro Okamura
Li Haosheng
Each student has produced a short report of what the Balzan Travel Fellowship enabled them to do.

**Balzan Styles of Reasoning Research Output**

**Publications**


**Presentations**


Lu-Vada Dunford, “The Transmission Dilemma for Revisionism”, MANCEPT Workshop on Collectivism in the Morality of War, Manchester University, UK.

Lu-Vada Dunford, “The Problem of Just War Theory for Terrorism”, EuroISME, Toledo Spanish Infantry Academy, Spain.


Griffin Klemick, “Davidson’s Promise for Metaethical Naturalism”, York University Graduate Conference (The Legacy of Donald Davidson), April 2017.


Griffin Klemick, “Peirce and ‘Objective Pragmatism’”, Boston University Graduate Conference in Philosophy, October 2016.


James Davies, “Mathematical Fictionalists Cannot be Sceptics About Reference to Abstract Objects”, American Philosophical Association, Central Division Meetings, St Louis, MO, February 2015.

All publications, conferences, websites, scholarships and visitorships acknowledge the generosity of the Balzan Foundation in making this vital project possible.
Theses Completed (with the Balzan Foundation gratefully acknowledged)


Zachary Irving, *Mind-Wandering is Unguided Attention*.


Ancient Sanctuaries of the Area of Etruria and Lazio:
Religious and Cultural Interference

Mario Torelli
2014 Balzan Prize for Classical Archaeology

Balzan GPC Advisor: Paolo Matthiae
Project Directors: Mario Torelli, Fausto Zevi, Lucio Fiorini
Researchers: Elisa Marroni, Sofia Cerrone, Andrea Di Miceli, Camilla Manna, Ilaria Manzini, Diego Ronchi, Fabrizio Santi, Luca Pulcinelli, Anna Maria Sgubini Moretti, Gilda Benedettini, Andrea Carini
Affiliated Institutions: Accademia Nazionale dei Lincei; Università di Roma “La Sapienza”; Università di Perugia
Period: 2015-2019

Mario Torelli is Emeritus Professor of the History of Greek and Roman Art at the Università di Cagliari and Università di Perugia. At the centre of his six-fold project is the religious interference which grew out of the different cultures in contact with each other between the proto-historic age and the Archaic and Classical periods.

1. The Cult of the Dioscuri, from Sparta to Italy
   Director: Professor Mario Torelli, Accademia Nazionale dei Lincei
   Researchers: Elisa Marroni, Sofia Cerrone

One line of research is dedicated to a remarkable, undoubtedly multi-faceted case of religious interference between Greece and the Latin, Etruscan and Italic world: the cult of the Dioscuri, the archaeological and historical-religious aspects of which are investigated in the area of origin as well as in Laconia and Taranto. Italy’s entrance into this Greek cult is undoubtedly the fruit of the intense relationships between the Etruscan and Latin world and the world of the Greek motherland and its colonies, which started between the eighth and the seventh century BCE and progressively expanded to all the societies on the peninsula between the Archaic and Hellenistic
ages. The underlying reasons for this impressive cultural and religious expansion are essentially still unknown.

An announcement was posted for an annual renewable grant for a doctoral researcher in the field of the history of religious cults, for a research project on the theme of the cult of the Dioscuri on the Italian peninsula from the Archaic to the Late Republican period. The position was awarded to Dr. Elisa Marroni, and began in October 2015. Dr. Marroni’s annual grant was renewed for two more years, until September 2018. Another small grant for a young graduate for research on the theme of the cult of the Dioscuri in Sparta and in Taranto in relation to the main cults in Laconia was awarded to Sofia Cerrone, who began the research in January 2016 and concluded it in January 2017.

Upon conclusion of her work in September 2018, Elisa Marroni will present the results in the form of a book, to be published after an attentive control of the two parts of her research. One part is devoted to an unprecedented collection of the literary, epigraphic, numismatic and archaeological evidence concerning all the sanctuaries and forms of cult of the Twins known in ancient Italy from the Archaic to the Late Republican and Imperial period, was completed in September 2016. It will be published in a DVD attached to the study of the cult, and soon to be printed as a book. From the collection of data alone, a highly complex historical-religious panorama clearly emerges, with the cult of the Dioscuri appearing to be deeply rooted in many areas of Italy, ever since a very ancient period. The catalogue also clearly shows how strong a foothold the cult of Castor and Pollux had in Italy, and how widespread its diffusion was. Apart from in the main Magno-Grecian colonial centres in the most important cities of Latium Vetus (Rome, Ardea, Tusculum, Cori, Laviniun, Ostia) and Etruria, more remote areas were also concerned, like the Veneto area or Istria, or internal areas like Umbria or Samnium.

The work undertaken by Sofia Cerrone is finished. Cerrone produced a detailed scientific report on her research, from which it clearly emerged that in Taranto, a colony of Sparta, the funerary cult of the Anakes, the Dioskuri, hypostasis of the king (anax in the archaic form designating kings), is connected with the cult of Poseidon, whose only known religious centre in the West is Poseidonia. Sofia Cerrone has now started to work on the materials from the sanctuary of Capodifiume at Paestum, still unpublished, and is expected to complete the study of the material in March 2019. Furthermore, Professor Lucio Fiorini and Professor Mario Torelli decided to include in the research a very innovative publication of a book (Riti e cerimonie per le dee nel
santuario di Monte Li Santi – Le Rote, Narce) by Maria Anna De Lucia of the unique evidence of rituals gathered in her excavations in a sanctuary dedicated to various gods near Narce in the Faliscan territory. The work provides important comparisons with Gravisca’s archaeological evidence concerning sacrifices and various religious ceremonies of Central Italy.

2. **Gravisca. The Greek Sanctuary at the Port of Tarquinia**
   
   Director: Professor Lucio Fiorini, Università di Perugia  
   Researcher: Andrea Di Miceli

From the wide-ranging case history of this instance of interference between the Greek world and non-Greek cultures, another significant example is the rightly renowned sanctuary-emporium of Gravisca, the port of Tarquinia, where between 590 and 480 BCE Greek merchants (mainly from Ionia) traded with their Etruscan counterparts under the protection of divinities venerated in both their Greek and Etruscan aspects in dedications and inscriptions. Two types of materials are planned for publication, to be included as the last two volumes in the final edition of the excavations, one on archaic painted ceramics of clear Ionic inspiration and the other on Greek and Etruscan transport amphorae. The study of these two types of ceramic materials may provide useful diagnostic data on the exact provenance of both the Greek and the Etruscan merchants.

Andrea Di Miceli, winner of the post-doctoral grant announced by the Accademia Nazionale dei Lincei with funds made available by the Balzan Prize to Mario Torelli (announcement of 23 April 2015 – code 03_GRAVISCA_A; fellowship August 2015-March 2016) on the theme of the classification of the ceramics found at the Greek Sanctuary of Gravisca, execution of drawings of materials and digital illustration, has finished the classification, study and graphic documentation (including computer graphics) of amphora fragments from the so-called “South Sanctuary” at Gravisca, which were used both for the commerce of imported and local products. Together with Director Lucio Fiorini, Di Miceli wrote the text for the volume *Gravisca. Scavi nel santuario Greco, 13. Le anfore da trasporto greche ed etrusche.* Dedicated to material found during the excavations of the 1970s, it will be published in the series edited by Mario Torelli.

In agreement with Mario Torelli, the Accademia dei Lincei has announced a post-doctoral grant from these funds, on the subject of Etrusco-Italic votive material of the
fourth to the second centuries BCE from the sanctuary of Gravisca. The grant was awarded to Camilla Manna, who also received an extension for an additional four months. Manna has finished the classification and related photographic documentation required by her research. Her work will be published in a volume entitled *Gravisca. Scavi nel santuario Greco, 14. Il materiale votivo tardo*.

In agreement with Mario Torelli, Professor Lucio Fiorini used the technical instruments in the storerooms of the Museum of Tarquinia to organize the study and subsequent publication of two more volumes of the series *Gravisca. Scavi nel santuario Greco*, namely *Gravisca. Scavi nel santuario Greco, 3. Le ceramiche laconiche* entrusted to Dr. Francesca Boitani, former inspector responsible of the Italian Soprintendenza for Gravisca’s excavations, and *Gravisca. Scavi nel santuario Greco, 7. Le ceramiche etrusche dipinte arcaiche*, entrusted to Professor Lucio Fiorini. However, the recent drastic changes in the organization of the Italian Soprintendenze has caused a serious delay in the work of classification and study of the archaeological materials, and consequently on work on these last two volumes. Publication of the two volumes foreseen in the original project, *Gravisca. Scavi nel santuario Greco, 13. Le anfore da trasporto greche ed etrusche*, and *Gravisca. Scavi nel santuario Greco, 14. Il materiale votivo tardo*, by Edipuglia in Bari awaits permission from the Lincei Administration.

3. **Ostia, the Temple of the Round Altar**

   *Director: Professor Fausto Zevi, Università di Roma “La Sapienza”*
   
   *Researcher: Ilaria Manzini*

Another case of interference between the Etruscan-Latin world concerns the cult of Apollo. From the boundless evidence of the presence of the god of Delphi in Italy, one controversial case was chosen: a recent hypothesis that attributes the temple of the Round Altar in Ostia to Apollo. Research on Ostia during the Republican period has long been concerned with confirming the ancient archaeological documentation of the city with the literary sources. The Temple of the Round Altar, excavated 1969-79, is highly relevant to this debate, but has never been completely published. Thus, an announcement was made for an eight-month fellowship, which was won by Ilaria Manzini, in the *dottore di ricerca* programme of Methodology of Archaeological Research at Rome’s “La Sapienza” University. Since August 2015, she has been able to complete the study of the archaeological material from the earlier excavations and
present a substantial draft for publication by the Accademia dei Lincei in Notizie degli Scavi e scoperte di Antichità.

10,733 fragments of various categories were examined. For the most part, they were ceramics, but there were also architectural, plaster and stucco, glass, metal, and bone fragments. They were compared with the reference typologies of related categories and with bibliography pertinent to other contexts of the excavation, with the purpose of placing them in a topological and chronological framework. A catalogue of the types of clay used for the different categories of ceramics was also produced. The data were compiled in an Excel table facilitating elaboration though numbering the fragments by layer and by type.

Altogether, 504 drawings of the most significant material for the reconstruction of the chronology of the strata in question were carried out. They were then elaborated using Adobe Illustrator. Again, with the aim of producing documentation for a publication on the excavation, 232 photographs of various materials and 103 photographs of broken ceramics fragments (magnified 50 times through a microscope) were produced, in order to document the different types of clay identified in the course of the study.

The study has made it possible to determine the different phases of construction of this important monument, while at the same time recovering equally important elements on the plan and sacred topography of the Republican city. The richly illustrated 272-page manuscript, complete with maps, plans, elevations and charts, has been delivered to the editors of Notizie degli Scavi. Appendices document common types of ceramics in the catalogue, as well as the seals, clay types, stamps and other epigraphic data.

4. Circei, the Latin Colony and its Sanctuaries

Director: Professor Mario Torelli, Accademia Nazionale dei Lincei
Researcher: Diego Ronchi

Yet another case concerns the cult of Circe, the goddess at the centre of one of the most important myths of the Odyssey. The sanctuary dedicated to her rose in the Latin colony of Circei (393 BCE), which took its name from the mythical sorceress and from the promontory where the cult was located. The editing of a recently defended doctoral thesis on the centre and its many antiquities has shown that the traditional identification of massive substructures in opera incerta as a villa (the so-called Villa
dei Quattro Venti) is unfounded. Both the data collected by the careful analysis of the structures and the discovery of a votive dedication from the Republican period on the inside of the complex suggest instead that this great monument can be identified as the sanctuary of Circe, and that the imposing architectural complex can be recognized as one of the “Sullan sanctuaries” of Lazio, like Fortuna Primigenia in Palestrina and Hercules Victor in Tivoli. Once the general framework of the archaeological district of Monte Circeo has been analysed, this sanctuary will mainly be discussed in relation to what different sources say about the relationship with the place of the cult of Circe.

Diego Ronchi, winner of the Balzan grant announced in July 2015, carried out his research on the colony of Circeii centred on the themes of cult, roads and phases of settlement in the district, with the following results: the identification and attribution of a new sanctuary, a diachronic reading of the main monumental polarities in context, an entirely new reinterpretation of the evidence, the construction of an archaeological map with numerous unpublished sites, and the positioning of four stationes along the route of the Via Severiana.

The main line of research is linked to matters of cult in the colony. Ronchi’s recent investigations have identified a new sanctuary with powerful substructures, but its attribution and the circumstances of its construction have yet to be made clear. The investigations have made it possible not only to identify a cult of Venus at Circeo, but also to contextualize the origin and to attribute the previously identified sanctuary to this cult.

Another central aspect of this research is the diachronic reading of the territory as well as the diachronic reading and contextualization of the main cultural polarities scattered about the region. The history of the colony of Circeii was explored in greater depth, arriving at the interesting discovery of a colonial deductio by Caesar’s father precisely in the territory of this little centre. Thus a highly prolific, homogeneous constructive facies distributed throughout the entire area emerges, as well as the dedication to the divine ancestress of the gens Iulia of the sanctuary, up to now erroneously interpreted as a Roman republican Villa, the “Villa dei Quattro Venti”.

In order to define the phases of occupation of the territory, an archaeological map must be drawn. Derived from years of surveys and investigations on site, its most important result has been the positioning of the stationes of Clostris, Ad Turres Albas, Cerceios and Ad Turres, touchstones in the debate on the route of the Via Severiana.
Another result which came from the survey and analysis of the building techniques of the structures located along the road was a redefinition of the chronology of the *Fossa Augusta*. Unanimously the infrastructure leads back to the age of Nero; nevertheless the observation of the first phases of the canal structures, the materials found during the survey and other considerations favour dating at least this stretch of the infrastructure to the first years of the first century BCE. In this context, Nero’s initiative recalled by Tacitus and Suetonius could have concerned the organization and conjunction of analogous infrastructures scattered along the route of cabotage.

Ronchi’s research has been published in a volume entitled *La colonia di Circeii. Dal tardo arcaismo alla colonia di Cesare padre: santuari ed evidenze monumentali.*

**5. Lanuvio, the Sanctuary of Juno Sospita**

*Director: Professor Fausto Zevi, Università di Roma “La Sapienza”*

*Researchers: Fabrizio Santi, Luca Pulcinelli*

On the larger theme of the so-called Sullan sanctuaries, a link will be re-established with research on the sanctuary of Juno Sospita in Lanuvio, already begun three years ago under the direction of Professor Fausto Zevi, who will continue to supervise the research, addressing the study of ceramic materials found in the excavation and expanding investigations to the area of the lower sanctuary of the Late Republican and Imperial era. Together with Ronchi’s study, it will be possible to obtain not only articulate information on the Proto-historic and Archaic phases, to which the birth of the cult is dated, but also more precise data on the plan in terms of the late Republican, monumentalizing phase of the sanctuary, which in fact connects the transformation of the sanctuary complex to the grandiose, spectacular architecture of the Late Hellenistic period. As planned, the project completed most of the analysis of the western half of the excavation area, corresponding to approximately the front half of the Mid-Republican temple. Thus far, the analysis carried out has led to the identification of elements not completely recognized until now. To that end, two fellowships were planned, for twelve and eighteen months respectively.

The research was entrusted to post-doctorate candidates Luca Pulcinelli and Fabrizio Santi, and their fellowships were extended. Luca Pulcinelli’s concerned the study of about 1,200 diagnostic objects subdivided into various classes, coming from around 180 stratigraphic units, and another body of around 10,000 classified artefacts. The material from the Iron Age still awaits definitive arrangement by a specialist who will
undertake the typological study of the whole body of artefacts, datable to the Iron Age and Archaic Period, with provenances from excavations carried out in the years 2006-2011 in the area of the Temple of Juno Sospita in Lanuvio, and their placement in the cultural context of *Latium Vetus*. The ceramic material was washed and only minimally restored; an inventory was begun. A general check on previous work was performed simultaneously with the execution of drawings of the diagnostic material, which was then mounted on temporary typological tables, with the drawings organized by class, form and type.

After a review of the excavation literature on Lanuvio, the study of the artefacts was set up following typological and chronological criteria, in line with the most recent trends in ceramic studies. In order to provide scholars with a research tool, a simple, traditional architectural typology easily subdivided by class and form was adopted, following ICCD (Istituto Centrale per il Catalogo e la Documentazione) terminology where possible, thus ensuring the integrity of the information for this complete edition of the artefacts. Close attention was also devoted to the strata of provenance in order to construct a repertoire that can be consulted with ease, to facilitate the work for future studies in ceramics. While this typological analysis does not substitute a catalogue, it contains an extensive description and information on each entry, including bibliographical references and comparisons with excavation publications.

Fragments that could be reconstructed were also selected and the work was entrusted to professional restorers. The documentation resulted in 625 drawings; the work of digitizing and mounting them on panels has yet to be completed. Photographic documentation of the catalogued material consists of 460 stratigraphically organized digital photos with captions.

From the most significant and best preserved material, a selection was made with the aim of presenting it in the Museo Civico Lanuvino, which has also been responsible for curating the exhibition plan for the excavations of the temple of Juno Sospita. In the same sector, preparations for curating the exhibition *Sacra Nemora* (Villa Sforza Cesarini, Lanuvio) should also be mentioned, as should L. Pulcinelli’s contributions to the Acts of the scholarly gathering held in Rome’s “Tor Vergata” University on 26 and 27 October 2016 (“A sud di Roma. Itinerari per la conoscenza, la conservazione, la valorizzazione e la fruizione di siti archeologici e monumenti del Lazio”), publication forthcoming.
Fabrizio Santi, the second fellow, studied the finds from excavations carried out between 2006 and 2011 in the area of the temple of Juno Sospita in Lanuvio with the aim of publishing all of the excavations results. A thorough examination of existing literature on the subject, especially the bibliographical documentation from the first investigations on the site (over a century ago) by Angelo Pasqui, Goffredo Bendinelli and Alberto Galieti, and texts on protohistory in Latium and the archaic Latin world, is fundamental. Unfortunately, research carried out in the Archivio di Stato di Roma (Sant’Ivo alla Sapienza) and in the Archivio Centrale di Stato did not produce useful documentation on the area before and during Pasqui’s excavations, but only part of the documentation related to the Savile excavations in the area of Villa Sforza Cesarini, corresponding to a portion of the sanctuary of Juno Sospita, and to work in the area of the temple of Hercules, which although of undisputed interest for ancient Lanuvio were of no use for the research project on the temple.

All of the evidence identified in the excavation area was examined – for that matter ‘negative’ – and then described analytically in data sheets. The drafting of these sheets required a complete revision of the photographic and graphic documentation, which was duly emended, as well as constant reflection on the elements that were most difficult to attribute, often leading to unexpected results or a better understanding of hitherto unexplained traces on the terrain, especially as regards small buildings (capanne). Besides these buildings, further discoveries were made in the area of the cela and left wing of the Mid-Republican temple. For the Late Archaic period, a better understanding of evidence around the foundations made it possible to better define the plan. Together with the study of the material, the analysis of all the structures constitutes the main part of this work on the excavation.

6. A Great Inter-ethnic Sanctuary: Lucus Feroniae and Its Votive Offerings
   Director: Professor Mario Torelli, Accademia Nazionale dei Lincei
   Researchers: Anna Maria Sgubini Moretti, Gilda Benedettini, Andrea Carini

No less significant are a few known cases of interference that took place in the religious sphere between the various ethne on the Italian peninsula, and the characteristics of inter-ethnical sanctuaries have been recognized. As for the Etruscan and Latin area, Lucus Feroniae, or “sacred woods (lucus)” dedicated to the Sabine-Faliscan goddess Feronia has been chosen as the most outstanding example of a cult place with intense ethnical and cultural contact between Latins, Etruscans and Faliscans.
Various excavations carried out in this sanctuary in the second half of last century have revealed an enormous quantity of votive materials amassed after it was sacked by Hannibal; they are virtually unpublished. However, only those retrieved in the most recent excavation campaigns carried out by former Superintendent of the Villa Giulia, Anna Maria Sgubini Moretti, and her collaborator, Gilda Benedettini, were studied, because of the accuracy and trustworthiness of the dig. The extraordinary archaeological situation of the deposition of the votive objects, all of very high quality, will be presented by the excavators, while the research carried out by young Balzan research fellows concerns the classification and analytic study of the ex-votos, whose provenance constitutes a fundamental indicator of the peoples that used the sanctuary.

The winner of the first announced grant, Andrea Carini, was confirmed for two more years and will finish his work on time on 1 January 2019. His task, the study of the pottery from the Moretti-Benedettini excavations, is almost concluded: he has cleaned, catalogued and carried out graphic and photographic documentation of the fine, plain and coarse pottery as well as amphorae. The artefacts were numbered and catalogued in a database with 12,012 records, including the main information on individual exemplars.

The successive phase of this work launched the study of one of the main classes of ceramics documented on the site: the black-figure pottery, which represents almost one third of all of the materials catalogued (3,865 out of 12,012). For this enormous group, 187 drawings were made, and the final phase of the study shows the different types of forms and possible variants. Although the work is still in its preliminary phases, it is possible to put forward a few hypotheses on the first results. Among the materials collected, there is a clear majority of open form vases (ca. 3,000 fragments) as opposed to closed form vases (ca. 200 fragments). A chronology for this class of ceramics can be constructed, which shows when the sanctuary was most intensely frequented (60% date to the end of the fourth and the beginning of the third century BCE; ca. 35% to the beginning to mid-third century; the remainder to the first half of the second century BCE). The analysis of the forms, as well as the clays and types of glaze used indicates local or regional production for most of the objects (at least 65%). A smaller group (ca. 35%) seems to have been produced in central or southern Italy, in northern Etruria, and in Attica. There is also a large group of exemplars of the “Petites Estampilles” group, including vase bases with decoration made from 72 different moulds, some of which were used frequently in central and southern-central Italy, while others are rare and difficult to place.
Re-processing this data has made it possible to formulate useful considerations on the reconstruction of one of the most important phases in the life of this sanctuary and to obtain information of primary importance for dating the stratigraphic levels recognized during the excavations.

Following the work of classification of the artefacts from Lucus Feroniae, carried out by Carini, both the metallic objects and the animal bones belonging to the sacrificed animals became the subject for two small fellowships. The winner of the fellowship for the metallic objects is Dr. Giovanni Ligabue, who completed his research in December 2017, while the fellow for the bone material, Dr. Nicoletta Perrone, is expected to conclude her assignment in December 2018.

All the materials studied by the various researchers will be assembled, checked and edited by the end of March 2019, to be processed and printed by the publisher by the end of 2019.

Publications


De Lucia, Maria Anna, Riti e cerimonie per le dee nel santuario di Monte Li Santi – Le Rote, Narce. Forthcoming.
The Cultural and Social Dimensions of the Economic Crisis 2008-2014. Financial Cultures, Human Suffering and Social Protests

Manuel Castells
2013 Balzan Prize for Sociology

Balzan GPC Adviser: Dominique Schnapper
Project Directors: John Thompson, Sarah Banet-Weiser, Mireia Fernandez-Ardevol
Researchers: Michelle Forelle, Nahoi Koo, Lana Swartz, Antonio Calleja-Lopez, Arnau Monterde, Javier Toret, Enrique Serrano, Eirini Avramopoulou, Silvia Pasquetti
Affiliated Institutions: University of Cambridge; University of Southern California; Open University of Catalonia, Barcelona

Manuel Castells is University Professor and Wallis Annenberg Chair of Communication Technology and Society at the University of Southern California, Los Angeles; Professor at the Open University of Catalonia, Barcelona; Director of Research in the Department of Sociology, University of Cambridge; and Professor Emeritus of Sociology and of City and Regional Planning at the University of California at Berkeley. His threefold research program, conducted over three years (2014-2017), in three of the different institutions to which he is directly affiliated (the University of Southern California, the Open University of Catalonia and Cambridge University) falls under the general theme of The Cultural and Social Dimensions of the Economic Crisis 2008-2014. Castells coordinated the entire research program, with associate directors taking scientific responsibility for supervising the work of the young researchers (at the University of Southern California, Professor Sara Banet-Weiser; at the Open University of Catalonia, Dr. Mireia Fernandez-Ardevol; at the University of Cambridge, Professor John Thompson). The young researchers in each of the three institutions conducted their own research, leading eventually to their own publications, with the guidance and support of the coordinators and supervisors of the research program. A considerable number of individual publications have come out of this project; others are planned or underway.
RESEARCH TEAM 1: University of Southern California, Annenberg School of Communication – “NEW FINANCIAL CULTURES AFTER THE CRISIS”
Director: Professor Sarah Banet-Weiser
Young Researchers: Michelle Forelle, Nahoi Koo, Lana Swartz

The three young researchers included in this project were Dr. Lana Swartz, now Assistant Professor of Communication at the University of Virginia; Nahoi Koo and Michelle Forelle, both doctoral students at the Annenberg School of Communication at the time. Each one of them developed their own projects of research, under the general theme of the transformation of business cultures during and after the economic crisis of 2008-10. Forelle studied the cultural origins of financial derivatives in Wall Street; Koo studied the rise of new entrepreneurial networks in Silicon Valley; Swartz provided a comprehensive analysis of the cultural foundations of currencies and means of payment with a focus on cryptographic currencies, such as Bitcoin. The three young researchers were academically very active from 2014 to 2016, and are well on their way to brilliant careers. Balzan support has been acknowledged in several of their publications.

Part 1: New Financial Culture in Wall Street

Michelle Forelle: Research activities undertaken for the Balzan Project
After an exploratory research trip to New York City in September 2014, Forelle met with other researchers from the social/cultural studies of finance field, including Arjun Appadurai, Randy Martin, Rob Wosnitzer, and Caitlin Zaloom, and conducted interviews with financiers, most notably John Reed, former chairman of the New York Stock Exchange, and former CEO of Citigroup. During the 2014-2015 academic year, she developed her methodology in a seminar paper examining high-speed training for the graduate course “Capitalism, Culture, and Communication” with Professor Christopher Holmes Smith in the fall of 2014, and in the spring of 2015 conducted additional research as part of a seminar paper for the graduate course “Political Sociology” with Professor Nina Eliasoph. In April 2015, she attended the conference “Intersections of Cultural Studies and Finance” at the University of North Carolina at Chapel Hill. She presented her research proposal, early research and preliminary findings as part of a graduate student panel and received valuable feedback from prominent scholars and interested peers. In the fall of 2016, she continued her research in New York City, and presented a paper, “Then you are making riskless money”: A
critical discourse analysis of credit default swap coverage in the financial trade press” (submitted to the Journal of Cultural Economy).

**Part 2: The New Financial Cultures of Silicon Valley**

Lana Swartz and Nahoi Koo worked on the New Financial Cultures in response to the 2008 global financial crisis, with a focus on the cultures of financial innovation in Silicon Valley, including new forms of currency, new payment systems, and new forms of collaborative consumption and alternative economic practices.

**Lana Swartz: Research activities undertaken for the Balzan Project**

During the period of work supported by the Balzan Foundation Prize, Swartz completed her dissertation on the cultures of money as a key component of the transformation of business cultures during and after the financial crisis. She focused much of her work on the rise of cryptographic currencies, such as Bitcoin, as an expression of new entrepreneurial financial cultures. The impact of her research, partly conducted under the auspices of the Balzan project, allowed her to select academic job offers from various universities. Swartz is currently Assistant Professor of Media Studies at the University of Virginia.

**Research**

Swartz’s dissertation, *Tokens, Ledgers, and Rails: The Communication of Money* (defended in 2015) was supported by the Balzan Foundation. After preparing it for publication, the book has been submitted to Yale University Press for full review.

Swartz also began a research project inquiring into everyday practices of financial technology. She conducted twenty in-depth interviews with young people in two cities on their use of payment apps, most notably, Venmo, the most popular mobile payment system in the United States. In particular, she was interested in how interviewees negotiate economic dimensions of social relationships through this technology and how they experience surveillance, platform governance, and other components of the political economy of this technology. This research will complement her existing dissertation research, be included in the book manuscript and form the basis of at least one journal article.
Longitudinal research on the economic culture of the financial technology industry was also continued by engaging in participant observation at Money2020, the largest and most important related trade show (Swartz’s fourth year at this event). As in previous years, she conducted interviews with key members of the industry. This research supplemented her dissertation research and is included in her in-progress monograph as well as other publications.

A research project with Nancy Baym (Principal Researcher, Social Media Collective, Microsoft Research New England) and Andrea Alarcon (previously Research Assistant, Social Media Collective, Microsoft Research New England; currently PhD student, Annenberg School for Communication and Journalism, University of Southern California) was begun on attempts by activists and Silicon Valley entrepreneurs to change the economic culture of the global music industry by adopting blockchain technology. The team collected and analysed original documentary data and interviews.

Publications

Books

Journal Editing

Journal Articles
Chapters in Books

Presentations
- Invited Speaker, December 2016, “Imagined Economies,” Movable Type launch, University of Virginia.
- Fellows Speaker, July 2016, “Goodbye Wallet?” Berkman Center for Internet and Society, Harvard University.
Nahoi Koo: Research activities undertaken for the Balzan Project

Nahoi Koo has independently worked on three different research projects supported by the Balzan Foundation: (1) startup networks in Silicon Valley, (2) global culture and transnational entrepreneurship in South Korea, and (3) the feeling of happiness in the network society. During her spring semester in 2016, Koo spent a month in the San Francisco Bay area to conduct fieldwork. She attended eight startup conferences and networking events in Santa Clara, San Jose, Oakland, Mountain View, San Francisco, and Redwood City. As a conference participant, she was able to engage in startup competition and pitching events with other professionals in the technology industry. She was also able to make connections and recruit her interview respondents during networking sessions. Her paper from this project was presented at the European Group for Organizational Studies Colloquium.

Simultaneously, Koo collected company data of 150 billion-dollar global startups using multiple secondary sources. She is currently revising a statistical model to test variables that predict a startup’s business performance. This will be further explored in her forthcoming doctoral dissertation. In the past few years, she has written and presented four papers using econometric and network analyses of startups in Silicon Valley. One of her papers, “Integrating Network Theories and Analysis into Research on Entrepreneurship”, won the top student paper award from the National Communication Association. For the same paper, she also received a student award from the Korean American Communication Association.

Koo spent her summer in Seoul interviewing young entrepreneurs in 2015. Her fieldwork was also supported by the Academy of Korean Studies. She used snowball sampling to recruit a dozen respondents who returned to Korea after graduating from college in the United States. The paper she wrote for this project, which will be presented at the USC Korean Studies Institute, explored how the micro- and macro-level processes of transnational brain circulation contributed to South Korea’s creative economy. Another paper she wrote for this project grapples with global cultures and hybrid identities. She creates a topology of distinct hybrid identities based on individuals’ migration history.

For her last project, Koo used the World Value Survey to construct a structural equation model of subjective well-being. Results showed that inclusion of an individual’s network was positively associated with his/her feeling of happiness and life satisfaction. However, diversification of information access through different
information and communication technologies was negatively associated with feelings of happiness and life satisfaction. She presented her paper for this project at the conference of the International Communication Association. Koo also expanded her paper investigating how people in Catalonia responded to the 2008 financial crisis. Despite the economic downturn, people who participated in the sharing economy felt more empowered and satisfied.

During the three years of participating in the Balzan research group, Koo was able to grow as a productive, interdisciplinary scholar. She was supervised by Professor Sarah Banet-Weiser to discuss her research ideas and designs. She also took a variety of methodology courses such as econometrics, structural equation modeling, social network analysis, and python programming from the department of economics, the Keck School of Medicine, and the Annenberg School for Communication at the University of Southern California. Also supported by the USC Graduate Student Government, the Annenberg Research Network on International Communication, and the Annenberg Foundation, she was able to participate in doctoral consortiums and summer institutes at the University of Oxford. A list of the scholarship produced in relation to her research follows.

**Paper Presentations**


**Research Presentations**


**Journal Submissions**

1. The new culture of sharing in the post-2008 Silicon Valley (Regional Studies)
2. The emergence of transnational entrepreneurship in South Korea’s creative economy (East Asian Journal of Business Management)
3. Integrating network theories and analysis into research on entrepreneurship (Journal of Business Research)
4. Network analysis of startups participating in the sharing economy (Journal of Small Business and Enterprise)
5. Evaluating subjective well-being in the network society (Journal of New Media and Society)

**Working Papers**

1. Globalization, International Migration, and Hybrid Identities
2. Happiness in the Aftermath of the Global Financial Crisis: A Case Study of Catalonia

Director: Dr. Mireia Fernandez-Ardevol
Young Researchers: Arnau Monterde, Javier Toret, Antonio Calleja-Lopez

The three recipients of the Balzan Prize awarded to Professor Castells linked to the IN3 – Open University of Catalonia have worked to conduct an in-depth, comparative analysis of two selected network movements: 15M in Spain and Occupy Wall Street (OWS) in the US. Popular indignation against the management of the financial crisis has led, both in Europe and the United States, to the rise of social protests and social movements that have distinctive features in the age of the Internet. Since 2011 social movements in which networks play an important role have emerged. These movements have a number of characteristics that point to multiple and complex new perspectives to analyze and understand them. Network movements seem to have real and deep impacts in the societies they emerge from. At the same time, there are significant relations among these movements in different countries that urge us to start looking at them in their relational dimension.

The main goal was to compare these two significant experiences, the 15M and OWS, taking into account the dynamics of the current global wave of mobilizations that are shaping social transformations and are shaped by them. Three main dimensions define the specific goals: first, the characterization of the collectives related to the two movements and their degree of involvement; second, the analysis of the network movements from a multidimensional perspective; and third, the study of their social, cultural and institutional impacts.

The original project at the IN3 was designed, in practical terms, to allow the three young researchers to work in an interrelated way. Each of them developed their activity individually to achieve the goals of the project, showing a growing intellectual autonomy. The Balzan funding also made it possible to hire two research assistants that helped in specific tasks of the project during given periods of time.
Arnau Monterde
Arnau’s research goes beyond the boundaries of academia as he has the aim of fostering empirically-based reflection in Spanish society. Most of his production is in therefore Spanish, in order to allow such reflection and dialogue with social actors. His is also highly committed to making his results open to the society. This shapes his selected channels for publication (i.e., academic open access journals). The Internet constitutes an essential channel to socialize research results, and with this end in mind, the website http://tecnopolitica.net/ has a dedicated section to the Balzan Prize project. Arnau has published both journal articles and book chapters at an international level. Most of his production is still in the form of working papers that constitute the seed for future journal articles. He has already submitted a manuscript based on his PhD dissertation for publication by the most prestigious Spanish publishers in social sciences and humanities, Editorial Alianza. After the three-year period of the Balzan Prize, Arnau undoubtedly strengthened his autonomy as a researcher and demonstrated his capacity to secure new funding sources to maintain his personal research program, which is now turning into democratic direct participation as the next steps taken by the networked movements that already entered in the political institutions. In particular, he is a researcher of the H2020 project “Decentralised Citizens Owned Data Ecosystem” (DECODE).

Besides his participation in EU funded research projects, the primary indicator of the strong contribution of Balzan Prize in the case of Arnau is his full-time position as postdoctoral researcher at the IN3 Research Institute at the Open University of Catalonia since January 2017.

Journal Articles

PhD Dissertation
net/10803/327599 (Awarded Exceptional thesis by the UOC Doctoral School, and to be submitted to Editorial Alianza for publication).

**Working Papers**

**Talks and Conferences**
- Monterde, A. (2014). *Tecnopolítica y reinvención de la plaza en la onda global por la democracia real* [Technopolitics and reinvention of the square in the real democracy global wave]. Speaker at Meeting: Independent studies program (MACBA), Barcelona (Spain).
- Monterde, A. (2014). *La emergencia de los movimientos red. Una conversación empírica y multidisciplinar con la teoría de los movimientos sociales* [The emergence of network movements. An empirical and multidisciplinary conversation with social movements theory]. Meeting: Datanalysis15M meeting (IN3-UOC), Barcelona (Spain).

**Javier Toret**
Balzan funding supported Javier to coordinate the book entitled *Tecnopolítica y 15M: La potencia de las multitudes conectadas* [Technopolitics and the 15M: The Power of Connected Crowds], published in 2015. Due to the international impact
of this research, Toret has been invited to deliver public talks in several countries, which has helped him to support his research activities and, in selected cases, timely fieldwork.

In mid-2016 Javier was hired by a prestigious private company to coordinate training courses on digital communication strategies for political communities on an international level, and selected projects on communication and politics, which fulfills his interest as practitioner and distances him from academia.

**Book**


**Talks and Conferences**

- Toret, J. (2014). *#OccupyHongKong: los movimientos en red llegan a Asia [#OccupyHongKong: network movements arrive in Asia]*. Meeting: Network, Movements, and Technopolitics (IN3-UOC), Barcelona (Spain).

**Antonio Calleja-López**

Antonio has combined the Balzan Prize project with wider research in sociological studies on techno-scientific practice and innovation. Internationally focused, he has demonstrated a clear commitment to follow an academic career that has been supported by his participation in the Balzan Prize project.

Thanks to the Balzan Prize support, Antonio has been able to focus his research on the
emerging forms of technopolitics and democracy within the 15M protest movement, which helped him to finish his PhD dissertation in January 2017.

**Book**

**PhD Dissertation**

**Working Papers**

**Talks and Conferences**

**Organized Academic Meetings**

#GlobalRevExp: Emergencia de las prácticas tecnopolíticas, 2010-2015. Organizer: Network, Movements and Technopolitics, IN3-UOC, in collaboration with ITESO (Instituto Tecnológico y de Estudios Superiores de Occidente) Guadalajara, México, UFES (Universidade Federal do Espírito Santo), and the @DatAnalysis15M network. Barcelona (Spain), July 13-14, 2015. http://tecnopolitica.net/content/emergencia-de-las-pr%C3%A1cticas-Tecnopol%C3%ADticas-2010-2015

**Organized Public Outreach Meetings**


**RESEARCH TEAM 3: Cambridge University – “THE HUMAN AND SOCIAL COST OF ECONOMIC CRISIS”**

Director: Professor John Thompson
Young Researchers: Eirini Avramopoulou, Silvia Pasquetti

**Aims**

The aim of this strand of the research funded by the Balzan Foundation, as part of the Balzan Prize won by Manuel Castells in 2013, was to explore the ways in which individuals and groups in different parts of Europe live through and experience the economic crisis, how it affects them and how they respond to it, both at the level of feelings, emotions and forms of suffering and in terms of practices and types of collective action. A bottom-up approach was adopted to study in a qualitative and ethnographic way, through in-depth interviews and close observation, the daily lives of ordinary individuals in carefully selected regions of Europe. This qualitative research was used as a basis for developing new concepts, theoretical ideas and arguments to understand the lived reality of economic crisis, to analyse the feelings,
emotions, forms of suffering and practices that characterize the ways that individuals experience and respond to economic crisis, and to study the processes through which these emotions, forms of suffering and practices feed into types of collective action, including protest movements and other kinds of social and political action such as voting in elections and referendums.

Achievements
The original plan was to carry out fieldwork in three countries – two in southern Europe, where the deleterious consequences of the crisis have been most apparent, and one in northern Europe. Greece and Italy were selected as the two southern European countries, and the plan was to carry out research in the UK as the country in northern Europe. In practice, empirical research was focused in Greece and Italy, and an originally planned-for third case study was dropped because the empirical research in Greece and Italy proved to be immensely fruitful and at the same time very challenging and time-consuming, and the exceptionally high quality of the interviews carried out in Greece and Italy required a substantial amount of money that had to be set aside in order to translate and transcribe them so they could be accessible. Moreover, as the social and economic trajectory of the UK evolved and the economic crisis of 2007-08 began to recede. Other issues began to emerge in the UK as significant, such as issues related to immigration.

As originally planned, Dr Eirini Avramopoulou was appointed to carry out the research in Greece and Dr Silvia Pasquetti carried out the research in Italy. For part of this time Avramopoulou was based in Athens, and part of the time in Volos and Pelion. She carried out more than 60 interviews – around 30 in Athens and 30 in Volos and Pelion, in accordance with the project’s original plans. Pasquetti was based in Parma and Florence, two prosperous northern Italian cities, for part of the time, and for the other part she was based in Syracuse and other smaller towns in southeastern Sicily. She did more than 60 interviews, around 30 in Parma and 30 in Sicily – again, in accordance with the project’s plans.

The research sites were chosen to ensure a range of views that reflected both highly developed metropolitan centres and rural, less developed regions. In both countries interviewees were selected from different social strata, including upper middle class professionals (lawyers, doctors, etc.); people in full-time employment in the public and private sectors; people who were self-employed (including small business owners, some
of whose businesses had failed); workers who are currently unemployed, who had lost their jobs or who are precariously employed; young people who are not in employment, education or training (NEETs); and pensioners. These selection criteria ensured that there was an equal representation of men and women and a wide age range, from young people in their late teens and early 20s to pensioners in their 60s and 70s. Migrants as well as native Greeks and Italians were included – a task made easier by the fact that both Greece and Italy have experienced a large influx of migrants in recent years, even before the most recent migration surge from Turkey and North Africa.

The timing of the fieldwork was fortuitous, especially in Greece (2010-2015), with a deepening economic crisis, and threats to eject Greece from the Euro. While Greece was in turmoil, Italy, with the third largest economy in the eurozone, was struggling to cope with a crisis that had exposed its parlous fiscal position and thrown many thousands of people out of work, and the country was simmering with anger, frustration and fear.

Before Eirini and Silvia began their fieldwork, they worked closely with John Thompson to develop detailed templates that covered the range of issues to be explored in the interviews, all of which were recorded and safely stored, with each researcher developing a system of pseudonyms for interviewees and fictitious place names for towns, villages, districts or streets when the use of actual names could compromise the anonymity of interviewees. Nearly 80 of the interviews have been fully translated and transcribed (over 2,500 pages) in English, thus constituting a very rich and substantial body of qualitative research material.

In addition the interviews, Eirini and Silvia took detailed field notes about the research sites, the individuals they interviewed and the interviews they conducted. These field notes are also valuable primary material because they help to contextualize the interviews, describe the circumstances in which the interviews were carried out (many were carried out in the homes of the individuals concerned) and provide a commentary on aspects of the interview and the interviewee that are not apparent from the text of the interview on its own.

Outputs and career development
In terms of outputs and publications, this research is still work-in-progress. The grant has been used very effectively to produce a rich body of primary research material.
This kind of material is very difficult to produce not only because it is time-sensitive and time-consuming, but also because it required a special set of linguistic and ethnographic skills. Given these challenges, the team was very fortunate to be able to generate as much primary material as it did. They are now in the process of analysing this material and developing outputs of various kinds.

Research Reports
Project Director Thompson drew directly on the reports by Eirini and Silvia and used their findings to develop an original analysis of the human and social costs of the economic crisis in Greece and Italy. This co-authored paper was published in 2017 as John B. Thompson, Eirini Avramopoulou and Silvia Pasquetti, “Suffering: The Human and Social Costs of Economic Crisis”, in Manuel Castells et al. (eds.), Europe’s Crises (Cambridge: Polity, 2017).

Apart from these initial outputs, Thompson, Avramopoulou and Pasquetti plan to write a much more substantial text that builds on the analysis developed in the paper described above and uses much more of the rich primary material they have produced, possibly as a book with a similar title: Suffering: The Human and Social Costs of Economic Crisis, with a view to publication in 2019.

Eirini Avramopoulou
Avramopoulou is currently A.G. Leventis Fellow at the British School at Athens, and is working on a project entitled “Changing Spaces of Refuge: Histories and Geographies of Displacement amidst Politics of Crisis in Greece”, which builds directly on her research on the human and social costs of economic crisis in Greece.

Publications

Invited Lectures, Seminars and Conferences/Workshops
- Curator, thematic section “Images of Desire at Different Times of Crisis” for the Athens Ethnographic Film Festival in Greece http://www.ethnofest.gr/, November
26-29, 2015, along with one-day conference on current social and political issues pertaining to understandings and experiences of ‘a life in crisis’ and the effects of hope and desire at times of crisis.


- Seminar, Sociology Department, University of Athens: “Wounds that Hurt: Neocolonialism, Crisis and Film Production”, December 9, 2015.

- Workshop to present work on the refugee crisis that built directly on Avramopoulou’s research on the economic crisis in Greece. Copenhagen, May 25-28, 2016

- Seminars on cultural diversity, economic crisis and the refugee crisis, hosted by Diotima: Centre of Study and Research on Women, the International Medical Corps and the General Secretariat for Gender Equality, Greece. June 24-25, 2016.


- “Refusing to perform the subject of crisis? Reflections on the performativity of everyday life and on epistemic violence”. Talk at international conference “(Non) Performance as Method”, organized by Dr. Hypatia Vourloumis and funded by the Research Centre for the Humanities.

**Silvia Pasquetti**

Pasquetti is currently developing a new project about the intersection between the refugee crisis and the economic crisis in Italy, “Injuries of Refuge: Asylum and Nested Marginalities in Peripheral Europe”, a multi-sited ethnography of asylum and inequalities in ‘peripheral’ urban areas in Europe. The new project is directly indebted to the research she did for the Balzan project. The Balzan project has also enabled Pasquetti to secure a funded Research Excellence Framework PhD Studentship for
three years (beginning September 2017) on a project entitled “Asylum, Inequality, and Sense of Place in Peripheral Europe”.

Publications

Invited Lectures, Seminars and Conferences/Workshops
- “In Search of Refuge: Asylum, Mobility, and Inequality in Italy” and “If It is a Heavy Job You Do It! Refugees and the Meanings of Work in an Unequal Italy”. Talks presented at the Sixth Ethnography and Qualitative Research Conference, University of Bergamo, Italy, June 8-11, 2016.
The Cult of Saints in the West in the Latter Centuries of the Middle Ages. Research on Shrines and Religious Life in France and Italy

André Vauchez

2013 Balzan Prize for Medieval History

Balzan GPC Adviser: Karlheinz Stierle

Project Directors: André Vauchez, Catherine Vincent, Sofia Boesch Gajano, Umberto Longo

Researchers: Immacolata Aulisa, Geneviève Hasenohr, Damien Ruiz, Alexis Charansonnet, Alessandra Malquori, Cécile Caby, Nicole Bériou, Ludovic Viallet, Claudine Delacroix-Besnier, Luc Ferrier, Laurent Théry, Armelle Le Huérou, François Bougard, Sylvie Duval

Affiliated Institution: Académie des Inscriptions et Belles-Lettres, Institut de France, Paris

Period: 2014-

Website: http://sanctuaires.aibl.fr/

André Vauchez is Professeur émérite d’histoire du Moyen Âge at the Université de Paris Ouest Nanterre. The second half of his 2013 Balzan Prize in Medieval History is devoted to the endowment of the Fondation André Vauchez pour le développement des recherches en histoire religieuse du Moyen Âge, established under the aegis of the Académie des Inscriptions et Belles-Lettres in Paris in 2014. It has the aim of assisting researchers in carrying out their projects and advancing their scientific programmes. It can also provide financial assistance for young researchers under thirty-five years of age who are engaged in doctoral or postdoctoral research. Several projects are currently underway: editing texts related to the religious history of the Middle Ages (thirteenth-fifteenth century); research on sanctuaries and religious life in France and in Italy; publication of works related to religious life and culture in the Middle Ages.

Among the scientific projects that the André Vauchez Foundation has decided to support, some are already well advanced, whereas others have experienced difficulties in getting off to a timely start due to administrative or financial issues.
1) Funds for publication
The publication of André Vauchez’s work entitled *Les vies et le culte de S. Homebon de Crémone (XIIe-XXe siècle)* came out in Brussels in 2018. The French translation of the Latin lives of this patron saint of tailors was overseen by Véronique Souche-Hazebrouck, and Laura Albiero assisted with the chapter on the liturgical sources of the cult of St. Homobonus.


In 2015, thanks to contributions from the Foundation, the volume by Immacolata Aulisa (University of Bari), *Les Juifs dans les récits chrétiens du Moyen Âge*, was published by CNRS Editions, and a collection of studies by Geneviève Hasenohr (IRHT-CNRS) entitled *Textes de dévotion et lectures spirituelles en langue romane (France, XIIe-XVIe siècle)* was published by Brepols.

2) Funds for editing texts and documents
Damien Ruiz has finished his revision of the *Sermons* of the French Cardinal Hugues de Châteauroux, which should be edited by Alexis Charansonnet (Université de Lyon II), who is also at work on the introduction. When this work is completed, it will be submitted for publication at the École française in Rome, in its Documents series.

Ruiz recently published his critical edition of the *Opera omnia* of Hugh of Digne, a Franciscan from Provence, in the series of the International Society of Franciscan Studies in Assisi.

3) Funds for Colloquia and Seminars
The colloquium organized by the Société d’Histoire de l’Eglise de France to honour the memory of the great historian Marc Venard, specialist on religious life in France in the sixteenth century, was held at the Université de Paris-Ouest-Nanterre and in Rouen in October 2016.

The international colloquium “Mise(s) en œuvre des Ecritures”, organized by the
universities Sorbonne Nouvelle and Paris-Sorbonne with the cooperation of the École biblique in Jerusalem was held in Paris on 5 and 6 December 2016.

The international colloquium “Observer l’Observance” organised by Ludovic Viallet, Sylvie Duval and Haude Morvan was held at the Université de Clermont-Ferrand in June 2017 to launch a research programme dedicated to different “observant” currents in Western Christianity between the fourteenth century and the end of the sixteenth century.

The international colloquium organized by Jacques Dalarun, “Le manuscrit franciscain retrouvé”, was held at the École des Chartes and at IRHT from 20 to 22 September 2017. The manuscript, recently acquired by the Bibliothèque Nationale de France (NAL 3245), contains an unknown life of St. Francis by Thomas de Celano, recently edited by J. Dalarun, as well as a long, totally unknown commentary on the Pater noster which, if not the work of St. Francis of Assisi, is certainly by someone very close to him.

The international colloquium “Judaïsme et christianisme au Moyen Âge”, organized by Anne-Marie Vannier, Professor of Catholic Theology at the Université de Lorraine, was held at the University of Metz on 18 and 19 October 2017. This meeting centred along the lines of the work of Israël Yuval, author of Deux peuples en ton sein, which won the 2014 Prix Bernheim pour l’Histoire des Religions, and Gilbert Dahan. Both scholars participated.

The Foundation also granted a subsidy to Marie-Madeleine de Cevins, Professor at the Université de Rennes II, and to Olivier Marin, Professor at the Université de Paris XIII, to assist them in holding a seminar on “Les saints et leur culte en Europe centrale au Moyen Âge”, which was held at the École Normale Supérieure between October 2016 and May 2017. It enabled them to pay for the travel of researchers invited from Central and Eastern European countries.

4) Research programmes

Research under the direction of Catherine Vincent (Université de Paris-Ouest-Nanterre) and her collaborators with the aim of compiling an inventory on sanctuaries and pilgrimage sites in France in the Middle Ages (Inventaire des sanctuaires et lieux de pèlerinage en France à l’époque médiévale) is well underway after two years of work, and an agreement has been made with a computer programmer for digitisation and the
creation of an Internet site. The investigation unites two universities, conservators, art historians and archaeologists. Contacts have been established with the Mertens Institut in the Netherlands, and with the Centro di studi sui santuari medievali under the direction of Professor Giorgio Otranto at the University of Bari and at Monte Sant’Angelo, in northern Apulia. In 2016/17, the French study was extended to a growing number of dioceses. Each sanctuary was indexed as follows: the object of veneration, the legends and miracles attributed to it and previous and present-day practices. Around thirty sanctuaries per diocese are included. The study is not limited to famous pilgrimages or those that have stood the test of time, in order to capture this specific way of religious life in the broadest manner possible.

The research programme on Sanctuaires et espaces sacrés de la Sabine et de la région de Rieti à l’époque médiévale et moderne made rapid progress in the course of the past year under the guidance of Professors Sofia Boesch Gajano and Umberto Longo of the History Department at La Sapienza University in Rome. Thanks to funding from Professor Vauchez’s project, two scholars were recruited to do research and record cults and sanctuaries in the area under consideration. In collaboration with the IT Department at La Sapienza, a historical atlas on cult places has been undertaken in the form of an online platform where all of the historical and geographical information is collected in a data base. The project is well underway and should produce a draft of digitised cartography of sanctuaries in the Sabine region and in the area around Rieti in 2018/19. Already the cult stratifications brought out by long-term research have shown the dynamics of ecclesiastical institutions (in particular, the major role of the Abbey of Farfa in that area) and of the religious orders (above all, the Franciscans in the Province of Rieti). In this respect, an interesting colloquium on the Franciscan settlements in the Rieti region was held in May 2017 in Greccio. The deplorable destruction by the recent earthquake has devastated the region between Umbria and the Marches, including several small sanctuaries located in the mountainous regions which have not yet been studied, thus indicating how urgent the need for this survey is. It is remarkable how this research programme has raised unanimous support from territorial collectives and local ecclesiastical authorities, as well as pronounced interest on the part of the local population.

An agreement was signed with CIHAM (CNRS-Université de Lyon II) in order to draw up an online atlas, the Atlas de la Thébaïde on line, under the direction of Alessandra Malquori (Florence), Cécile Caby (Université de Lyon II) and Nicole Bériou (IRHT-CNRS) at the beginning of 2017. This project has the aim of assembling a base of
knowledge providing access to figurative themes in representations of hermits in the Tuscan Thébaïdes in connection with other documents (manuscripts and manuscript illumination, the Bible and its commentaries, moral and spiritual texts). A prototype associating texts and images on this theme and on hermetic life is being created with the help of a computer scientist. It was presented in Paris in December 2017 by the Académie des Inscriptions et Belles-Lettres.

Les procès de canonisation médiévaux inédits dans l’espace français is a research programme directed by André Vauchez calling for the publication of a certain number of medieval canonisation processes concerning French saints that have remained entirely or partially unpublished and that should be made available to researchers. In this context, Luc Ferrier, project engineer at the École des Hautes Etudes en Sciences sociales, is nearing the end of his work on editing the canonisation process for Philippe Berruyer, archbishop of Bourges (†1261), which was held from 1265 to 1266, and was prolonged until 1331. The document is first-rate for the religious history of France in the thirteenth and fourteenth centuries, as it relates to a bishop saint that the Bollandistes ranked among the praetermissi (individuals left out) of the Acta sanctorum, which means that he has remained almost unknown, even though he played an important role in the entourage of St. Louis and the religious life of Berry.

Laurent Héry, specialist in history, and Armelle Le Huérou, Doctor of Medieval Latin Literature, have undertaken the study and editing of the documents related to the process of canonisation for Charles de Blois, Duke of Brittany (†1364), housed in the Vatican Archives, where one part related to the local cult of the saint has remained unpublished.

5) New research programmes submitted to the Foundation Board for approval
Cécile Treffort, Professor of Medieval History at the Université de Poitiers and former director of CESCM, will complete an Inventaire épigraphique de la Gaule chrétienne (IIIe-IXe siècle), already begun in 1966 by Henri-Irénée Marrou. Three volumes were published, but work stopped in 1997. The inventory should be completed in two years. The work of Jean Guyon and Marc Heijmans has yielded a great deal of new material on Provence from Late Antiquity to the High Middle Ages, as has the thesis of Marianne Uberti, finished in 2014 under the direction of F. Baratte for Aquitaine. It will also be necessary to make an inventory of the working documents (photos, dossiers) already drawn up by their predecessors. Everything will be facilitated by the Centre d’Études Supérieures de Civilisation Médiévale at the Université de Poitiers,
which has great experience in this field and which will see to retrieving existing data and compiling a systematic pre-inventory of Christian inscriptions in the ecclesiastical provinces that made up Gaul.

Martin Morard, in charge of research at CNRS, has procured an Edition électronique de la Glose de la Bible dite ordinaire, starting with the incunabulum edition of 1481, enriched with scientific annotations and notes. Around half of the text has already been worked on and a third (corresponding to the New Testament) has been revised and made available. Undoubtedly this will be a precious tool for researchers.

The number and quality of the applications addressed to the Foundation shows that it has taken its place among institutions to which researchers in the religious history of the Middle Ages turn to try to compensate for the insufficiency of research funds. It should also be noted that almost all of these programmes use advanced computer technology, which makes it possible for the historian to stay up to date with inputting and processing documentary sources.

Publications


Dworkin-Balzan Fellowship Programme

Ronald Dworkin†
2012 Balzan Prize for Jurisprudence

Balzan GPC Adviser: Antonio Padoa Schioppa
Project Directors: Liam Murphy, Jeremy Waldron
Research Fellows: Jacob Weinrib, Jed Lewinsohn, Hadassa Noorda, Candice Delmas, Katharina Stevens
Affiliated Institution: New York University
Website: http://www.law.nyu.edu/centers/lawphilosophy/fellows

Ronald Dworkin was Professor of Philosophy in the Philosophy Department and Frank Henry Sommer Professor of Law at the School of Law, New York University, and Emeritus Professor of Jurisprudence at Oxford University and University College London. Due to his unfortunate and untimely death, responsibility for the project was delegated to Liam Murphy (NYU), who elaborated Dworkin’s project to include more young researchers and a fellowship programme extending over three years. For the final year of the project, Jeremy Waldron (NYU) served as co-director.

New York University School of Law hosted and implemented the research project associated with Dworkin’s Balzan Prize. The programme had two main elements: five postdoctoral fellowships awarded over a period of three years in association with the NYU Colloquium in Legal, Political, and Social Philosophy (at the heart of Dworkin’s academic life); a conference held at NYU in the third year of the project to discuss themes from Ronald Dworkin’s work. The conference participants included the postdoctoral fellows, other young philosophers and legal scholars who had presented at the Colloquium during this period, and several more senior scholars with special expertise on Dworkin’s work. The programme focused on the following sets of interconnected themes that were of special interest for him: legitimacy, democracy, the rule of law, and the role of courts; international law and justice; the nature of rights; the relation between the moral life and the good life; philosophical foundations of substantive areas of law; legal interpretation; justice,
equality, and the market economy; law and political obligation; the objectivity of value.

The world-renowned Colloquium in Legal, Political, and Social Philosophy, taught by Professor Dworkin and Professor Thomas Nagel for twenty-five years, introduced a distinctive format for discussion of unpublished work. It has been widely imitated, and has attracted many of the world’s most distinguished philosophers and legal theorists as guests, including John Rawls, Jürgen Habermas, T. M. Scanlon, Judith Jarvis Thompson, and Peter Singer. In 2014, the colloquium reconvened, led by Samuel Scheffler and Liam Murphy. In 2015, it was convened by Scheffler and Jeremy Waldron; in 2016, by Murphy and Waldron; in 2017, by Murphy and Scheffler. The colloquium will continue to be taught every year, by some combination of Scheffler, Murphy, and Waldron. As this colloquium was at the centre of Ronald Dworkin’s academic life, it is appropriate that the colloquium should have a central role in the research project associated with his Balzan Prize.

Successful applicants for the fellowships had a doctorate in philosophy or law, and were selected in part on the basis of their fit with the themes of the research project. Fellows were required to attend the colloquium regularly and participate in discussion. They were also invited to participate in the conference. The two fellows appointed for 2014-2015 were Jed Lewinsohn and Jacob Weinrib; descriptions of their work can be found in the 2014 edition of the Overview and on the Balzan Foundation website. For 2015-2016, the fellow was Hadassa Noorda. Candice Delmas and Katharina Stevens were the final fellows in 2016-2017. Descriptions of Noorda’s, Delmas’s, and Stevens’s work can be found in the 2016 edition of the Overview and on the Balzan Foundation website (www.balzan.org/en/documents).

Conference - New York University School of Law, 7-8 September 2017

The conference anticipated in the research programme took place at the NYU School of Law on 7 and 8 September, 2017. It commemorated the Prizewinner’s work by celebrating the Colloquium in Legal, Political, and Social Philosophy, which he convened with Thomas Nagel from 1987 to 2011.

The conference comprised four modified colloquium sessions, with papers posted on the conference website in advance. Thomas M. Scanlon, Frank Michelman, Seana
Shiffrin and Joseph Raz, all of whom had presented at the colloquium during the Dworkin/Nagel years, were the four distinguished speakers. Lawrence Sager, one of the co-founders of the Colloquium, was guest interlocutor. Sessions were chaired by Liam Murphy, Lewis Kornhauser and Jeremy Waldron. Samuel Scheffler, Lawrence Sager, Liam Murphy and Jeremy Waldron acted as commentators.

The full programme is listed below. As is customary for the Colloquium in Legal, Social, and Political Philosophy, the papers can be found on New York University School of Law’s Website: http://www.law.nyu.edu/centers/lawphilosophy/colloquium.

**September 7**

4:30 - 6:30 p.m.  Session One  
Thomas M. Scanlon (Harvard)  
“Contractualism and Justification”

Commentator: Samuel Scheffler (NYU)  
Chair: Liam Murphy (NYU)

**September 8**

10:00 a.m. - 12:00 p.m.  Session Two  
Frank Michelman (Harvard)  
“Rawls’s Constitution-Centered Propositions on Legitimacy: A Friendly Interrogation”

Commentator: Lawrence Sager (University of Texas, Austin)  
Chair: Lewis Kornhauser (NYU)

2:00 - 4:00 p.m.  Session Three  
Seana Shiffrin (UCLA)  
“Democratic Law”

Commentator: Liam Murphy (NYU)  
Chair: Jeremy Waldron (NYU)
5:00 - 7:00 p.m.  Session Four
Joseph Raz (King’s College London and Columbia)
“Can Moral Principles Change?”

Commentator: Jeremy Waldron (NYU)
Chair: Samuel Scheffler

Discussion of the themes of the conference, with particular reference to the
Prizewinner’s research, continued at two conference dinners.
Towards a Global History of Music

Reinhard Strohm
2012 Balzan Prize for Musicology

Balzan GPC Adviser: Gottfried Scholz
Project Directors and Research Coordinators: Reinhard Strohm (Director), Laurenz Lütteken (Deputy Director); Marie-Alice Frappat, Angharad Gabriel-Zamastil (Research Coordinators)
Affiliated Institutions: University of Oxford; Universität Zürich
Period: 2013-2017
Website: http://www.music.ox.ac.uk/research/projects/balzan-research-project/

Reinhard Strohm is Emeritus Professor of Music at the University of Oxford. His research project aimed to promote post-European historical thinking, beginning with the consideration of what ‘western music’ would look like in an account of music history aspiring to be truly global. The project was not meant to create a universal (or global) history in itself, but to explore, through assembled case studies, parameters and terminologies that are suitable to describe a history of many different voices.

The programme’s Steering Committee consisted mainly of the representatives of the six collaborating institutions (Faculty of Music, Oxford University; Department of Music, King’s College, University of London; Institut für Musikwissenschaft, Universität Zürich; Musicology Department, Faculty of the Humanities, The Hebrew University, Jerusalem; Institut für Musikwissenschaft, Universität Wien; Institut für Musikwissenschaft und Medienwissenschaft, Humboldt-Universität zu Berlin), and an Advisory Board of international specialists of musicology and ethnomusicology.
Research Visitorships

During the years of operation, the programme supported researchers in musicology or ethnomusicology at an intermediate stage of their academic careers (postdoctorates but not yet full professors with tenure) for short-term research visitorships. These visitorships were advertised worldwide for each of the three years in March preceding the respective tenures; candidates were selected by the Steering Committee. The visitorships were held at the collaborating institutions under the supervision of a Steering Committee member, but were not appointments by or at the respective universities. The research visitors engaged with the history and historiography of music in cultures of other continents, and/or with its interactions with western music history, and/or with the question of an intercontinental/global history of music. They used the visitorships to carry out further research on their special topics, or widen the purview of their studies, and communicated about their work with colleagues, students and the public. One of their tasks was to convene or co-convene an international workshop on their particular research area, held at one of the collaborating institutions and open to the general public.

Research Visitors 2015-2017

Faculty of Music, University of Oxford
Dr. Christina Richter-Ibáñez (University of Tübingen, Germany): A Global View on Bach (June-July 2017)
Prof. Andrea F. Bohlman (University of North Carolina at Chapel Hill, USA): Music and Unofficial Media in Communist Poland (October 2017)
Dr. Luis Velasco-Pufleau (University of Salzburg, Austria): European New Music Festivals and the Emergence of an Intercontinental History of Contemporary Art Music (January-February 2017)

Institut für Musikwissenschaft, Humboldt-Universität zu Berlin
Prof. Gabriela Currie (University of Minnesota, USA): Sounding Alexander’s Legacy: the Gandharan Nexus (May-June 2016)

Department of Music, King’s College, University of London
Dr. James Mitchell (Khon Kaen University, Thailand, and Monash University, Australia): The Rabbit and the Hound: A Reassessment of the Impact of Western Recording
Activities on Non-Western Music Traditions (1900-1950), Using Siam/Thailand as a New Case Study (May-June 2016)

Department of Musicology, The Hebrew University, Jerusalem
Prof. Lisa Nielson (Case Western Reserve University, Cleveland, USA): Concerning Music and Musical Instruments: A Fifteenth Century Collection of Anti-Samāc treatises (June-July 2016)

Institut für Musikwissenschaft, Universität Wien
Dr. Barbara Titus (University of Amsterdam): The West in Musical Retrospect: South African Maskanda Music as Historiography (March-May 2016)

Musikwissenschaftliches Institut, Universität Zürich
Dr. Avra Xepapadakou (University of Crete, Greece): Western European Opera and Operetta Companies Touring in the South-eastern Mediterranean during the Nineteenth and Early Twentieth Centuries (April-May 2017)

Research Visitors 2015/2016 appointed in 2014

Department of Musicology, The Hebrew University, Jerusalem
Dr. Anna G. Piotrowska (Jagiellonian University, Kraków, Poland): Gypsy Music in European Culture (October-November 2015)

Institut für Musikwissenschaft, Universität Wien
Dr. Morag Josephine Grant (Independent researcher, Berlin, Germany): Martial Music in Global Historical Perspective (January-February 2016)

Department of Music, King’s College, University of London
Dr. Margaret Walker (Queens University, Kingston, Canada): Orientalism and Exchange: The Indian “Nautch” as Musical Nexus (January-February 2016)

Research Visitors 2014/2015

Institut für Musikwissenschaft, Universität Wien
Dr. María Cáceres-Piñuel (Institut für Musikwissenschaft, Universität Bern, Swit-
The International Music and Theatre Exhibition in Vienna 1892 (October-December 2014)
Dr. Tomasz Jeż (University of Warsaw, Poland): *Music in the Cultural Strategies of Jesuits in Latin America (Seventeenth-Eighteenth Centuries)* (March 2015)

**Department of Music, King’s College, University of London**
Dr. Jia, Shu Bing (Musicology Department, Central Conservatory of Music, Beijing, China): *The Dissemination of Western Music through Catholic Missions in High Qing China, 1662-1795* (January-February 2015)

**Faculty of Music, University of Oxford**
Dr. Melanie Plesch (Department of Music, University of Melbourne, Australia): *Towards an Understanding of the Rhetorical Efficacy of Latin American Art Music: Topics of Landscape* (January-February 2015)

**Musikwissenschaftliches Institut, Universität Zürich**

**Research Visitors 2013/2014**

**Humboldt-Universität zu Berlin**
Dr. Tobias Robert Klein (Humboldt-Universität zu Berlin, Germany): *Panafrika and the “Idea of Non Absolute Music”: An Exercise in the Global History and Aesthetics of Music* (January 2014)
Prof. Henry Spiller (University of California Davis, USA): *Javanese and Sundanese Music and Dance in European Historical Reflections* (January 2014)

**King’s College, University of London**
Dr. David R. M. Irving (School of Music, Australian National University, Canberra, Australia): *Analogues of Antiquity: World Cultures, Ancient Greek Music, and Comparative Anthropologies, 1500-1800* (May-June 2014)
Dr. Suddhaseel Sen (Stanford University, USA): *Intimate Strangers: Cross-Cultural Exchanges between Indian and Western Musicians 1880-1940* (May-June 2014)
Faculty of Music, University of Oxford
Dr. Jason Stoessel (University of New England, Armidale, Australia): The Role of the Singing Voice and Concepts of Song in Encounters between Latin, Persian and Mongol Cultures during the Time of the Mongol Empire, 1206-1368 (October-December 2013)
Prof. Estelle Joubert (Department of Music, Dalhousie University, Halifax, Canada): ‘Analytical Encounters’: Global Music Criticism and Enlightenment Ethnomusicology (April-May 2014)

Workshops and Conferences

Final Workshop
The workshop Transcultural Music Traditions was held from 7 to 9 April 2017 at the Institut für Musik- und Medienwissenschaften, Humboldt-Universität zu Berlin. It was introduced by a Keynote Lecture by Lars Christian Koch (Universität der Künste and Phonogramm-Archiv, Berlin) on 7 April, and involved two sessions: A Global View on Bach: Latin America and Asia in the Twentieth Century on 8 April, convened by Christina Richter-Ibáñez, followed by a performance of the Asambura Ensemble (Maximilian Guth), and Music, Media Geography, History on 9 April, convened by Andrea F. Bohlman. Speakers were Christina Richter-Ibáñez, Eva Moreda Rodriguez, Daniela Alejandra Fugellie, Thomas Cressy, Kayoung Lee and Christin Hoene (8 April), and Tom Western, Dariusz Brzostek, Ana Hofman, meLê Yamomo, Thomas R. Hilder and Andrea F. Bohlman (9 April).

This was the last of the long series of international workshops, seminars and meetings that were distributed over the five years of Reinhard Strohm’s highly articulated project, which has united six important academic institutions and a great number of researchers from all over the world, thus providing a global approach – both in terms of the project’s vastness and its depth – to the history of music, the fruit of different voices and points of view.

2016/2017

On 22 and 23 January 2016, a workshop Towards a Global History of Martial and Military Music: Comparative Perspectives for the Early and Pre-modern Period was held at the Institut für Musikwissenschaft, Universität Wien, with Morag Josephine
Grant (Berlin) as convenor. The other speakers were Ralph Martin Jäger (Universität Münster), Nina Reuther (Konstanz), Vivien Estelle Williams (University of Glasgow), Bruce Gleason (University of St. Thomas, Minnesota/USA), Keith Howard (SOAS, University of London) and Silke Wenzel (Hochschule für Musik und Theater, Hamburg). The workshop opened up a remarkable narrative of intercontinental parallels and relations between ceremonial and martial music-making in early modern times.

Places of Interaction: Histories of Music and Dance in India, Africa, and South-East Asia was held at the British Academy in London on 16 and 17 June 2016, with convenors Margaret Walker (Queen’s University, Kingston, Canada), James L. Mitchell (Khon Kean University, Thailand) and Reinhard Strohm. Keynote speakers were Katherine Butler Schofield (King’s College, University of London) and Anna Maria Busse Berger (University of California, Davis). Other speakers included James Mitchell, Rainer Lotz, James Kirby (University of Edinburgh), Margaret Walker, Tiziana Leucci (CNRS, France), Ann David (University of Roehampton, London), Nalini Ghuman (Mills College, Oakland), Gerhard Kubik (University of Vienna and C. J. Jung Institute, Zurich), Barbara Titus (University of Amsterdam and 2016 Balzan Research Visitor), Luis Velasco-Pufleau (University of Salzburg and 2016 Balzan Research Visitor), Andrée Grau (University of Roehampton, London), Judit Frigyesi (Bar Ilan University, Israel), Sen Suddhaseel (University Kolkata, India). A highlight of the Places of Interaction workshop was a song and dance performance by Urja Desai Thakore accompanied by Manjeet Sing Rasiya and Surjeet Sing Aulakh.

In 2016, Eastern Mediterranean and Western Asian Music, Ancient and Modern, a workshop on medieval and more recent middle Eastern musical life, took place from 4 to 6 November 2016 at the Faculty of Music, Oxford University, with Gabriela Currie, Lisa Nielson and Avra Xepapadakou convening. There were three keynote lectures, given by Owen Wright, Walter Puchner and Kevin Dawe, respectively. Three sessions were held: Early transcultural musical legacies from the Mediterranean to the Indus (speakers: Gabriela Currie, Ciro Lo Muzio, Andrew Hicks, Donatella Restani); Music Aesthetics in the Medieval Islamicate World (speakers: John Franklin, Dwight F. Reynolds, Pernilla Myrne, Lisa Nielson); Greece – a Cultural Crossroads between East and West (speakers: Katy Romanou, Kostas Kardamis, Avra Xepapadakou). The workshop also featured a concert of the Trio Khimaira in Oxford’s Holywell Room.
On 10 and 11 October 2014, Reinhard Strohm, Michele Calella and Angharad Gabriel-Zamastil convened an international workshop at the Institute for Musicology at the University of Vienna. Its title was Many Kinds of Music History: a Cross-cultural Enquiry. It hosted Regina Allgayer-Kaufmann, Tina K. Ramnarine, Tobias Robert Klein (research visitor 2013/2014), Britta Sweers, María Gembero-Ustárroz, Sławomira Żeranska-Kominek, Michael Fend, Reinhard Strohm and August Schmidhofer as speakers.

A workshop entitled The Global Music Culture of the Catholic Missions in the Seventeenth and Eighteenth Centuries was held at King’s College, University of London, on 6 and 7 February 2015, convened by Tomasz Jeż and Jia Shubing (research visitors 2014/2015), who gave papers on Jesuit missions in Latin America, and Western musicians in China in the 17th century, respectively. Other speakers were Bernardo Illari (University of North Texas College of Music), Leonardo Waismann (Universidad Nacional de Córdoba, Argentina), Egberto Bermúdez (Universidad Nacional de Colombia), Jutta Toelle (Max Planck Institute for Empirical Aesthetics, Frankfurt), Peter Allsop (Visiting Professor, Central Conservatory of Music, Beijing), Gabriele Tarsetti and Fabio G. Galeffi (Teodorico Pedrini Centre, Fermo, Italy), Lars Peter Laamann (SOAS, University of London), David R. M. Irving (The Australian National University), Daniele V. Filippi (Schola Cantorum Basiliensis) and Mateusz Kapustka (University of Zurich). Joyce Lindorff (Temple University, US), harpsicord, with Jean-Christophe Frisch, flute, and David R.M. Irving, violin, gave a recital with an introduction and discussion of Teodorico Pedrini’s Trio sonatas op. 3, composed in China.

A conference-workshop on Topical Encounters and Rhetorics of Identity in Latin American Art Music was convened by Melanie Plesch (research visitor 2014/2015) at the Faculty of Music, Oxford University, from 13 to 15 February 2015. The papers were given by Melanie Plesch (The University of Melbourne), Julio Mendívil (Stiftung Universität Hildesheim), Paulo de Tarso Salles (Universidade de São Paulo, Brazil), Omar Corrado (Universidad de Buenos Aires), Roberto Kolb-Neuhaus (Universidad Autónoma de México), Omar García Brunelli (Instituto Nacional de Musicología, Argentina), Acácio Pieade (Universidade do Estado de Santa Catarina, Brazil), Juan Francisco Sans (Universidad Central de Venezuela). The keynote address was delivered by Kofi Agawu (Princeton University). Virginia Correa Dupuy, mezzosoprano, and Marcel Ayub, piano, gave a Holywell Room recital of Latin American art music of the 19th and 20th centuries.
Historiography on Display: the Musical (Inter)nationalisms of the Fin-de-siècle was the title of the workshop held at the Österreichische Gesellschaft für Musik, Vienna, on 14 March 2015, convened by Maria Cáceres-Piñuel (research visitor 2014/2015). Papers on aspects of the international exhibitions in Vienna and elsewhere in Europe were offered by Nicholas Cook (University of Cambridge), Cristina Urchueguía (University of Bern), Maria Cáceres-Piñuel (University of Bern), Rachel Beckles-Willson (Royal Holloway, University of London), Stefan M. Schmidl (Österreichische Akademie der Wissenschaften) and Katharina Wessely (Österreichische Akademie der Wissenschaften).

Jin-Ah Kim (research visitor 2014/2015) convened a workshop entitled “European” Music in East Asia? The Musical Intertwining of Western Europe and East Asia in the Nineteenth and Twentieth Centuries on 1-2 May 2015 at the Institut für Musikwissenschaft, Universität Zürich. Speakers included Nicola Spakowski (University of Freiburg), Max Peter Baumann (University of Würzburg), Jin-Ah Kim (Humboldt University, Berlin), Zhang Boyu (Central Conservatory of Music, Beijing), Keith Howard (SOAS, University of London), Rinko Fujita (University of Vienna) and Oliver Seibt (Goethe University, Frankfurt).

Outside Europe, the workshop Musical Cultures under Relationships of Power: Eastern Europe and the Middle East was held at the Hebrew University of Jerusalem on 25 and 26 October 2015. It was convened by Anna G. Piotrowska (University of Kraków) and Ruth HaCohen (The Hebrew University). The event was inaugurated by a welcome from Dr. Suzanne Werder (International Balzan Foundation “Prize”, Milan) and Prof. Dr. Gottfried Scholz (Balzan Prize Committee). The visit of these two representatives, which helped to intensify the interest in the Balzan Prize in Jerusalem, was much appreciated by the participants and the local audience. After an opening session with a dialogue talk by Ruth HaCohen and Edwin Seroussi (The Hebrew University, Jerusalem), sketching the general framework for discussing musical cultures under relations of power, the two-day event consisted of the following sessions: Power, politics and musical legacy chaired by Marina Ritzareva; Revisiting ‘national’ in music chaired by Alexander Rosenblatt; East of Europe? Europe vis-à-vis the Middle East chaired by Abigail Wood. Papers were delivered by Bennett Zon (Durham University), Valentina Sandu-Dediu (Bucharest University), Judit Frigyesi (Bar Ilan University), Nadeed Karkabi (Martin Buber Institute, The Hebrew University), Marina Frolova-Walker (Cambridge University), Martin Stokes (University of London King’s College); other discussants included Milena Boshikova (Institute of
Art Studies, Sofia). The workshop concluded with a round table entitled ‘Insiders’ and/or ‘Outsiders’ in the history of music in Eastern Europe and the Middle East, a general discussion, and was chaired and introduced by Anna G. Piotrowska, with a conclusion by Reinhard Strohm.

2013/2014

A one-day research workshop entitled “Mongols Howling, Latins Barking”: Voice and Song in Early Musical Encounters in Pre-colonial Eurasia was held on 2 December 2013 at the Faculty of Music, Oxford. This was convened by Jason Stoessel (research visitor 2013/2014). Speakers were Charles Burnett (The Warburg Institute, University of London), Manuel Pedro Ferreira (Universidade Nova de Lisboa), Felicitas Schmieder (FernUniversität Hagen, Germany) and Jason Stoessel (University of New England, Australia). The main theme of the event was the cultural diversity of concepts of the voice in the Middle Ages (12th-14th centuries) and its relevance for global relationships. The concluding panel discussion, in which Catherine Holmes (University of Oxford) also participated, was chaired by Jason Stoessel.

From 15 to 17 January 2014, an international workshop-conference was held at the Humboldt-Universität and Wissenschaftskolleg zu Berlin, on the invitation of Prof. Dr. Laurenz Lütteken, entitled Alternative Modernities: Postcolonial Transformations of “Traditional” Music in the Nineteenth and Twentieth Centuries. Co-convenor with Laurenz Lütteken was Tobias Robert Klein (research visitor 2013/2014). The papers with their discussions revealed much of the reciprocity of musical developments in the West and in East Asia and Africa in the so-called “modern” period, whether through the increase of actual “influences” and cultural borrowings, or by the effect of historical events and encounters (including industrial relations, missions, global economies and wars) on national and regional musical identities. Papers were delivered by François Picard (Université de la Sorbonne, Paris), Yang Chien-Chang (National Taiwan University, Taipei), Tobias Robert Klein (Berlin), Nicholas Cook (University of Cambridge), Jonathan Goldman (Université de Montréal) and Henry Spiller (University of California, Davis). Research visitors of 2013/2014 were Klein, Goldman and Spiller. The event was introduced by Prof. Dr. Reinhart Meyer-Kalkus (Wissenschaftskolleg zu Berlin) and Reinhard Strohm.

The events in Berlin also included a meeting of the Steering Committee of the project at the Humboldt University on 15 January, and a public panel discussion between
Balzan Prizewinners Manfred Brauneck, Ludwig Finscher and Reinhard Strohm. Convened at the Istituto Italiano di Cultura, Berlin, by Professor Gottfried Scholz, it was entitled *Die grösere Welt: Transkulturelle Projekte der Musik- und Theaterforschung*. A concluding discussion of the project *Towards a Global History of Music* with all workshop speakers, Steering Committee members and advisors was held at Humboldt University on 17 January.

On 27 May 2014, the workshop *Theorizing across Cultures: Ethnomusicological and Historical-Musicological Perspectives* was held at King’s College, University of London. Convened by Suddhaseel Sen (Stanford University/Presidency University, India; research visitor 2014/2015), speakers included Michael Fend, Suddhaseel Sen, Tina K. Rammarine, Matthew Pritchard, Georgina Born, Richard David Williams, Raymond Head, Naresh Sohal, Nicholas Cook, Martin Stokes, Reinhard Strohm and David R. M. Irving.

The workshop *Altermity and Universalism in Eighteenth-Century Musical Thought* was held from 30 May to 1 June 2014 at the Faculty of Music at Oxford. Convenors were David R. M. Irving and Estelle Joubert (research visitors 2013/2014). Papers were delivered by Philip Bohlman, Michael Fend, Emily Dolan, Keith Chapin, Glenda Goodman, Katherine Butler Schofield, Joan-Pau Rubiés, Ruth HaCohen, Matthew Gelbart, Miguel Á. Marín, David R. M. Irving and Estelle Joubert.

Full details on individual workshops and conferences can be found at the following websites:
http://www.music.ox.ac.uk/assets/Conference-Programme.pdf;

**Conclusion**

*Towards a Global History of Music* has come to an end, but Reinhard Strohm has discussed the wish to continue these studies of a global history of music with Jin-Ah Kim (2015 research visitor who convened the Zurich workshop), and many of the other specialists involved in the project, as well as funding institutions and advisers around the world. The director of this new research group on Global Music History is Jin-Ah Kim, assisted by an international steering committee and an advisory board.
The group’s activities will take the form of a *series of scholarly symposia* as the main format of a continuation of the Balzan Musicology Project, with annual or biannual international meetings. Enquiries and offers of collaboration are welcome. Please write to Prof. Dr. Jin-Ah Kim, Hankuk University of Foreign Studies (Seoul/Yongin), Minerva College of Liberal Arts, Department of Musicology and Media Studies, Humboldt University of Berlin (jin-ah.kim@cms.hu-berlin.de).

Physical, Mathematical and Natural Sciences, and Medicine
Balzan Postdoctoral Fellowship for Immunological Approaches in Cancer Therapy

James P. Allison and Robert D. Schreiber

2017 Balzan Prize for Immunological Approaches in Cancer Therapy

Balzan GPC Adviser: Jules Hoffmann
Affiliated Institution: University of Texas M.D. Anderson Cancer Center, Houston TX
Period: 2018-2021

James P. Allison is Chairman of the Department of Immunology, Executive Director of the Immunotherapy Platform, and Director of the Parker Institute for Cancer Immunotherapy, University of Texas MD Anderson Cancer Center, Houston TX. Robert D. Schreiber currently holds several positions at the Washington University School of Medicine in St. Louis: the Andrew M. and Jane M. Bursky Distinguished Professor at the Department of Pathology and Immunology, Professor of Molecular Microbiology, Director at the Andrew M. and Jane M. Bursky Center for Human Immunology and Immunotherapy Programs and Program Co-Leader in Tumor Immunology at the Alvin J. Siteman Cancer Center.

A Research Project on Cancer Immunotherapy – James Allison
The field of cancer immunotherapy, the development for which Drs. Allison and Schreiber received the 2017 Balzan Prize, has radically changed the landscape of cancer treatment. The findings that paved the way to the birth of immune checkpoint inhibitor therapy, pioneered by Allison, are a result of basic research conducted over a period of two decades in his laboratory while seeking to understand the fundamental biology of T cell activation and regulation. The subsequent steps of translating Allison’s vision of altering the regulation of tumor specific T cells through a protein called CTLA-4 and related molecules as a means of coaxing the immune system to attack tumors required a mammoth effort by a number of visionary scientists and clinicians. Since 2011, there have been eight approvals of immune checkpoint inhibitors by the US Food and Drug Administration for the treatment of advanced melanoma, lung cancer,
and metastatic kidney cancer, resulting in new treatment regimens that have saved of
tens of thousands of lives.

While currently available anti-CTLA-4 therapy provides a long-term cure for about
20% of metastatic melanoma patients, it remains ineffective for the rest. Additionally,
many other cancers termed “immunologic deserts” are resistant to immunotherapy.
This situation is unacceptable, and current work seeks to find out why certain
patients do not benefit from immunotherapy and how to extend its benefits to them.
The pace of change toward immunological approaches to the treatment of cancers is
accelerating, creating a shortage in the availability of scientists trained in the field,
who are required to build on these remarkable advances and clear the new hurdles
that have arisen toward further expansion of immunotherapy to previously resistant
disease.

With the research funds provided by the Balzan Prize, James Allison will establish
a postdoctoral fellowship to recruit three outstanding young investigators to receive
training in cancer immunotherapy research. This will serve as part of a continuing
effort to train the next generation of researchers to advance cancer immunotherapy
deeper on the basic science and translational level. Three career investigators who wish
to learn about cancer immunotherapy translational research will be supported for one
year each with this award mechanism, as basic scientists who conduct immunotherapy
research studies on patient samples.

Research Plan
Applicants for the Balzan Postdoctoral Fellowship will submit proposals for the work
they intend to carry out during the fellowship. All projects, to be reviewed by the
internal review committee, should fall under one of the following areas of active
research:

Identification of biomarkers that predict response to immunotherapy
Although immune checkpoint inhibitor therapies have proven to be effective as long-
term cures to a subset of cancer patients, up to this point, it has proven difficult to
select which patients are most likely to respond to a specific checkpoint inhibitor. In
the short term, the ability to predict likely responders would allow oncologists to give
checkpoint therapy only to those most likely to benefit, while preventing those most
unlikely to benefit from suffering any side effects of increased immune activity. As
more checkpoint inhibitors become available, the ability to predict which immune
therapies might be most beneficial will allow physicians to select the best treatment for a specific patient. Using pre- and post-treatment patient samples obtained by the IMT platform, immune and tumor cells will be isolated from tumors and profiled to find predictive markers of treatment response. Fellows will have access to flow cytometry, single cell sequencing, and CyTOF proteomics technology.

**Identification and validation of new targets for cancer immune checkpoint inhibitor therapy**

Transcriptional and proteomic profiling of tumor infiltrating T cells have revealed a number of gene transcripts and cell surface proteins specific to inactivated T cell populations. Further investigation in cultured cells continues to identify new immune checkpoint-related products. Using bioinformatics approaches on transcriptional profiling and proteomic data from patient-derived tumor-infiltrating lymphocytes, the highest ranked potential new immune checkpoint-related genes will be identified. The signalling activity and effect on T cell activation of these proteins will be examined in cultured cells. Finally, the potential therapeutic role of manipulation of candidate genes will be determined in mouse models of human cancer either by genetic manipulation or blocking antibodies and monitoring the effect on tumor growth.

**Rational prediction of combination therapies involving cancer immune checkpoint inhibitors**

While a wealth of evidence shows that combinations of immune checkpoint inhibitors together or with other anti-cancer therapies drastically increases the response rate, selecting the best combinations for a particular patient and cancer remains difficult. There are currently over 1,300 clinical trials exploring the safety and efficacy of various immunotherapies and combinations, selected in a non-systematic manner, which makes it extremely difficult to accumulate enough patients for a given combination. Accurate and rational design of immunotherapy combinations would reduce the number of active cancer immunotherapy trials, and greatly accelerate the approval of more effective combinatorial treatments. Up to this point, prediction of immune checkpoint inhibitor combinations has been hindered by gaps in the knowledge of the specific T cell populations and the downstream molecular pathways involved. Using CyTOF proteomic profiling of circulation and tumor infiltrating T cells, we identify specific T cell populations affected by individual checkpoint blockers. Selecting checkpoint blockers that act on separate T cell populations has enriched candidate targets that may provide additive or even synergistic therapeutic value.
Involvement of Young Investigators
The Balzan Fellowships will involve young investigators at multiple levels. Most directly, the purpose of the fellowship is to selectively recruit and train the best possible young researchers for the field of cancer immunotherapy. Top candidates will be identified during the selection process, and young professors will be involved on the selection committee. The research progress of the selected fellows will be evaluated by the supervisors at the midpoint and end of the year of support provided by the Balzan Fellowship. Each fellow will provide a progress report of his or her own progress at or near the end of the one-year period. Those three individual reports plus a brief overall summary provided by Dr. Allison will form the report of the overall results of the program at or near the end of the three-year funding period.

Symposium and Publications
At the end of the three-year period, a half-day Balzan Symposium for Immunological Approaches in Cancer Therapy open to the public will be held at MD Anderson’s south campus. Three first author publications are expected.
High Dimensional Profiling Analysis of Successful Cancer Immunotherapy

James P. Allison and Robert D. Schreiber
2017 Balzan Prize for Immunological Approaches in Cancer Therapy

Balzan GPC Adviser: Jules Hoffmann
Principal Investigator: Robert D. Schreiber
Deputy Principal Investigator: Maxim Artyomov
Additional Investigators: Matthew M. Gubin, Daniele Runci, Ekaterina Esaulova
Affiliated Institution: Department of Pathology and Immunology, Washington University School of Medicine
Period: 2018-2020

James P. Allison is Chairman of the Department of Immunology, Executive Director of the Immunotherapy Platform, and Director of the Parker Institute for Cancer Immunotherapy, University of Texas MD Anderson Cancer Center, Houston TX. Robert D. Schreiber currently holds several positions at the Washington University School of Medicine in St. Louis: the Andrew M. and Jane M. Bursky Distinguished Professor at the Department of Pathology and Immunology, Professor of Molecular Microbiology, Director at the Andrew M. and Jane M. Bursky Center for Human Immunology and Immunotherapy Programs and Program Co-Leader in Tumor Immunology at the Alvin J. Siteman Cancer Center.

Research Project Summary – Robert Schreiber
Although immune checkpoint blockade (ICB) therapy can induce durable clinical responses in a subset of cancer patients, the molecular and cellular changes associated with successful ICB therapy remain incompletely defined. The research in this proposal will leverage a well-characterized mouse tumor model developed in the Schreiber Lab with state-of-the-art high dimensional profiling approaches [i.e., single cell RNAsseq (scRNAsseq) and Time of Flight Mass Cytometry (CyTOF)] that are now established in the lab to better understand successful versus unsuccessful outcomes of cancer immunotherapy. The project also seeks to identify new predictive biomarkers...
to not only help stratify patients with respect to the types of immunotherapies they receive but also provide early feedback on their responses to immunotherapy.

Previous work in the Schreiber Lab led to the generation and characterization of the T3 methylcholanthrene (MCA)-induced mouse sarcoma line that has proven highly valuable in studying natural and therapeutic immune responses to cancer. T3 sarcoma cells form progressively growing tumors when injected into naïve wild type mice but these tumors are rejected when tumor-bearing mice are treated with either (a) ICB monoclonal antibodies (mAb) such as anti-PD-1 and/or anti-CTLA-4, (b) other immunomodulatory mAbs, or (c) tumor-specific neoantigen vaccines. As a consequence of these efforts, much is now known about the immune response against T3 tumors, including their mutational landscape, the identities of the dominant and subdominant T3 neoantigens, and the optimal timing for administration of the different immunotherapies to achieve durable responses to established T3 tumors in mice.

Recently, the team used complementary scRNAseq and CyTOF approaches to identify tumor-infiltrating immune cells from either progressively growing T3 tumors in mice treated with control mAb or tumors undergoing rejection in mice treated with anti-PD-1 and/or anti-CTLA-4. Unbiased assessment of the transcriptional status of tumor infiltrating immune cells by scRNAseq identified common and distinct alterations induced by the different ICB treatments in both lymphoid and myeloid cell populations. Specifically, multiple subpopulations of effector CD4+ and CD8+ T cells, Tregs and NK cells were identified along with five distinct macrophage subpopulations. The latter were distinguishable by the combinatorial presence or absence of mrc1 (CD206), CX3CR1, CD1d1 and/or Nos2 (iNOS). The macrophage subpopulations spanned the spectrum of macrophage activation states and changed dynamically during ICB therapy. These findings were confirmed and extended at the protein level using CyTOF and conventional flow cytometry.

This proposal will use scRNAseq and CyTOF together with conventional immunologic approaches in longitudinal studies to define the temporal relationships that result in generation of the different lymphocyte and macrophage subpopulations. Experiments will be conducted to explore whether individual subpopulations arise as a consequence of reprogramming of cells from other subpopulations or from new cell infiltration into the tumor. The effects of different immunotherapies, either alone or in combination, on the development of cellular subpopulations will be assessed. The generality of the observations will be explored by performing comparable experiments on, first,
other MCA-sarcomas and, then, on other types of mouse tumors. Various cellular subpopulations will be isolated by cell sorting and their anti-tumor versus pro-tumor functional activities assessed. Finally, using the data obtained in the mouse studies as a guide, samples will be taken from human cancer patients before, during, and after immunotherapy and analysed and the results linked to clinical outcome.

The research team, consisting of one senior and four young investigators at different levels, is both international and multigenerational. The project will be conducted in the Department of Pathology and Immunology at Washington University School of Medicine in St. Louis, and is scheduled for 2018-2020. Results of the studies will be published in peer reviewed scientific journals with acknowledgement of the second half of the 2017 Balzan Prize to Robert Schreiber for Immunological Approaches in Cancer Therapy. Towards the end of the research project, a Symposium on Immunotherapy of Cancer highlighting the results of this study and studies by other laboratories working in the immuno-oncology area may be organized in conjunction with the Balzan Foundation.
Exploring the Nearest Ultracool Dwarfs for Potentially Habitable Exoplanets Well-suited for Detailed Atmospheric Characterization

Michäel Gillon

2017 Balzan Prize for The Sun’s Planetary Systems and Exoplanets

Balzan GPC Advisers: Bengt Gustafsson, Luciano Maiani
Deputy Supervisor: Julien de Wit
Affiliated Institution: University of Liège, Belgium
Period: 2018-

Michäel Gillon is Research Associate, Belgian Funds for Scientific Research (F.R.S.-FNRS), at the University of Liège’s Institut d’Astrophysique et de Géophysique.

About Exoplanetology

Our view of our solar system has widened greatly within the last two decades, thanks to the thousands of exoplanet detections achieved since the seminal discovery of 51 Pegasi b in 1995. Most stars of our galaxy harbour their own cortege of planets, and most of these exoplanetary systems have an architecture very different from ours. Their global study has drastically improved our understanding of planetary formation and evolution mechanisms, while revealing their intrinsic stochastic natures. Furthermore, for a fraction of the exoplanets known to transit nearby stars, a detailed characterization is now within reach of our instruments: orbital parameters, precise measurement of the mass and size – the resulting density constraining the bulk composition – and study of the properties of the atmosphere, including its chemical composition.

Within the last decade, several molecules and atoms have already been detected in the atmosphere of highly irradiated giant planets. These pioneering results have inaugurated a new field of astronomy: comparative exoplanetology, the detailed study of planets orbiting other stars than the Sun. The best is yet to come for this nascent
field, as upcoming astronomical facilities like the James Webb Space Telescope should enable similar results to be obtained for smaller and more temperate planets, including for potentially habitable rocky planets. The search for chemical traces of life beyond our solar system is thus within reach, but it requires the detection of suitable targets, i.e., temperate rocky planets transiting stars small and nearby enough to make possible their detailed atmospheric characterization with current technology.

The project SPECULOOS (Search for habitable Planets EClipsing ULtracOOl Stars) has grown out of these developments. This new exoplanet transit search targets the nearest ultracool dwarf stars, i.e., stars of very low-mass (<10% the mass of the Sun) and size (about the one of Jupiter) lying at the bottom of the main sequence. These tiny stars have been mostly overlooked by exoplanet searches so far, and their planetary population is poorly explored. Gillon’s recent detection of the amazing TRAPPIST-1 planetary system with the prototype of SPECULOOS suggests that compact systems of temperate Earth-sized planets are frequent around ultracool dwarf stars, and that SPECULOOS should find many of them, which will become – like TRAPPIST-1 planets – exquisite targets for detailed characterization with James Webb and other upcoming facilities.

The Balzan Project
In this context, the goal of this Balzan project is to maximize the potential of SPECULOOS to explore the nearest ultracool dwarf stars. SPECULOOS is now based on one facility, the SPECULOOS Southern Observatory (SSO), which is composed of four 1m robotic telescopes currently in installation at Paranal Observatory in Chile. The idea is to extend the project to the Northern sky, to perform a complete exploration of all nearby ultracool dwarf stars. In collaboration with MIT, Gillon and his team at the University of Liège will initiate this extension by installing a first 1m Northern SPECULOOS telescope at Teide Observatory in the Canary Island of Tenerife. This project will fund a part of the installation cost of this new telescope (ground work plus cabling), and it will also fund the first year of research of a postdoctoral scientist who will be based at IAC in Tenerife to work on all aspects of the project (technical follow-up, target selection, planning of observation, data analysis, scientific exploitation). The Balzan Prize will also be used to fund the last two years (2019-2021) of the PhD of an undergraduate scientist working on the scientific optimization and exploitation of SSO, and to hire a two-year, half-time postdoctoral fellow who will manage the technical aspects of SSO and work on the scientific exploitation of SSO in data the other half of his/her time.
The remaining Balzan Prize funds will be used for the following:
- to fund a scientific workshop that will gather at Liege all the scientists involved in the project at the end of 2019, and a Balzan international conference on the planetary systems of ultracool dwarfs, to take place at Liege at the end of 2021;
- to procure equipment and operating credit (PC/laptops, replacement hardware pieces, travel cost to Chile or Tenerife or to conferences).

This Balzan project will represent a significant contribution to the success of the SPECULOOS initiative and to the search for life elsewhere in the Universe, by optimizing SPECULOOS potential for detecting potentially habitable rocky planets well-suited for detailed atmospheric characterization.
Two Balzan Research Projects

Federico Capasso
2016 Balzan Prize for Applied Photonics

Balzan GPC Adviser: Carlo Wyss
Project Supervisor: Federico Capasso
Researchers: Project 1: Miriam Serena Vitiello; Project 2: Margherita Maiuri
Affiliated Institution: Project 1: Harvard School of Engineering and Applied Sciences, Harvard University, Cambridge MA; Project 2: Princeton University, Princeton, NJ; Polytechnic University of Milan
Period: 2017-

Federico Capasso is Robert Wallace Professor of Applied Physics and Vinton Hayes Senior Research Fellow in Electrical Engineering, Harvard School of Engineering and Applied Science, Cambridge, Massachusetts.

Two research projects have been undertaken by Federico Capasso’s young researchers:
1. Optoelectronics and nano-photonics in two-dimensional nanomaterial heterostructures;
2. Quantum Effects in Complex Systems (‘Q-EX’).

**Project 1: Optoelectronics and nano-photonics in two-dimensional nanomaterial heterostructures**

Institution: Harvard School of Engineering and Applied Sciences, Harvard University, Cambridge MA
Supervisor: Prof. Federico Capasso
Proposed beneficiary: Dr. Miriam Serena Vitiello (CNR NANO - Nanoscience Institute, National Enterprise for Nanoscience and Nanotechnology (NEST), Scuola Normale Superiore, Pisa)

The project is based largely on Dr. Miriam Serena Vitiello’s ideas, and aims to explore novel electronic, optoelectronic, and plasmonic phenomena in the 2D vdW
heterostructures, seeking device applications based on these nanoscale quantum structures. Research will target radically new concepts and approaches to develop a novel optoelectronic technology based on 2D nanomaterials. All activities are driven by interdisciplinary methods and groundbreaking views, intersecting opto- and nano-electronics, photonics, material science and quantum engineering.

Introduction

Artificial semiconductor heterostructures played a pivotal role in modern electronic and photonic technologies, providing a highly effective means for the manipulation and control of carriers, from the visible to the Terahertz (THz) frequency range. Despite their exceptional versatility, they commonly require stringent epitaxial growth procedures due to the need of clean and abrupt interfaces, lattice matching or limited and controlled lattice mismatch, which proved to be major obstacles for the development of optoelectronic and photonic devices in the infrared.

The discovery of graphene has triggered an unprecedented interest in inorganic two-dimensional (2D) materials. Van der Waals (vdW) layered materials such as graphene, hexagonal boron nitride, transition metal dichalcogenides, and the more recently re-discovered black phosphorus (BP) display an exceptional technological potential for engineering nano-electronic and nano-photonic devices and components “by design”, offering a unique platform for devising heterostructures with a variety of properties. Each layer can indeed be forced to simultaneously act as the bulk material and the interface, reducing the amount of charge displacement within it. However, the charge transfers between different layers can be very large, meaning that large electric fields can be induced, therefore offering interesting possibilities for band-structure engineering.

Furthermore, these material systems also provide an intriguing platform for fundamental investigations, through the exploitation of their confined electronic systems.

Finally, being fully compatible with a wide range of substrates including flexible and transparent ones, if placed on chip with flat integrated optical circuits, they can allow maximal interaction with light, therefore optimally utilizing their novel and versatile properties for a wealth of applications in transformational optics, optical communications, spintronics and high-resolution tomography.
A plethora of opportunities and novel functionalities can therefore appear when one starts to combine several 2D crystals in one vertical stack allowing synergetic effects to become very important. The proposal aims to explore novel electronic, optoelectronic, and plasmonic phenomena in the 2D vdW heterostructures, seeking device applications based on these nanoscale quantum structures.

**Summary of specific objectives:**
1) Local investigation of the electronic and plasmonic properties of heterojunctions based on different 2D nanomaterials, developing novel scanning probe techniques in the far infrared, and specifically:
   a) amplitude and phase sensitive near field microscopy with sub-10-nm spatial resolution;
   b) near-field probes with integrated nanodetectors enabling large-area, high-resolution microscopy.
2) Development of electrically controlled optical phase modulators with hBN/graphene/hBN.
3) Development of novel nanoelectronic and photonic devices based on 2D nanomaterials and combined heterostructures.

**Outlook and impact**
The targeted goal of the proposal is to provide groundbreaking technological steps toward the development of a new technology based on 2D nanomaterials aiming to trigger the development of applications across the terahertz and the mid-infrared.

Ultimate electronics applications of the project’s proposed research would include, for example, flexible electronic systems that utilize the superior mechanical pliability of vdW materials. The development of novel high-performance nanoscale optoelectronic components prospects great impacts on future emerging signal processing and computer technologies. These new capabilities can be heterogeneously integrated into silicon CMOS based electronics. Optical/optoelectronic applications include photodetectors and integrated photonic systems. The proposed work-plan will also provide fundamental understanding of the materials properties and phenomena underpinning these applications. In addition, novel quantum electronic optoelectronic and nanophotonic devices have long been a focus in the device community because of the improved power/bandwidth performance possible with optical links for communication.
Almost every new 2D material possesses unusual physical properties. The 2D physics in such materials is just starting to emerge. Still, the most interesting phenomena can be realized in van der Waals heterostructures, which now can be mechanically assembled or grown by a variety of techniques, prospecting the emergence of a new low cost technology that would finally allow full tackling of also the terahertz portion of the electromagnetic spectrum.

Summary of achieved results

1. Near-field probes with room-temperature nanodetectors for sub-wavelength resolution imaging

Near-field imaging with terahertz (THz) waves is emerging as a powerful technique for fundamental research in photonics and across physical and life sciences. However, in the THz spectral range (frequency: 0.3–10 THz, wavelength: 30–1000 μm) imaging is severely restricted by diffraction.

Spatial resolution beyond the diffraction limit can be achieved by collecting THz waves from an object through a small aperture placed in the near-field. However, light transmission through a sub-wavelength size aperture is fundamentally limited by the wave nature of light. To overcome the above limits, the team conceived a novel architecture that exploits the inherently strong evanescent THz field arising within the aperture, to mitigate the problem of vanishing transmission.

To this aim, they introduced a novel near-field probe architecture, where the evanescent THz field is converted into a detectable electrical signal at the nanoscale. The latter goal is achieved by integrating a THz nanodetector based on a thin flake of crystalline black phosphorus (BP) into the evanescent field region of a sub-wavelength aperture to enable efficient detection of the transmitted wave.

Their results pave the way to the development of new coherent THz microscopes for large-area sub-wavelength resolution phase- and amplitude-sensitive imaging. In combination with QCLs operating in the 1.5–5.0 THz range, this imaging technique can aid the development of novel optical components (mirrors, filters, metamaterials, metalenses and sub-wavelength resonators) and open new research avenues in the studies of fundamental light-matter interaction phenomena in many interdisciplinary fields crossing optics, photonics, chemistry and biology.
Associated publications


2. M. C. Giordano, L. Viti, O. Mitrofanov and M. S. Vitiello. “Coherent near-field imaging at THz frequencies with enhanced sensitivity enabled,” submitted to Optica.


2. Phase-resolved detector-less terahertz near-field microscopy

Scattering-type scanning near-field optical microscopy (s-SNOM) offers an exceptional potential for the nanoscale imaging of material properties, such as free carrier distribution, chemical composition, localization and propagation of plasmon, phonons and plasmon-polaritons and for capturing ultrafast dynamics in nanoscale-systems. Amplitude and phase resolved s-SNOM thereby enables access to the spatial variation of complex-valued dielectric responses and both the amplitude and phase of near-field distributions.

THz frequency electromagnetic waves can resonantly interact with fundamental excitations of molecules and solids and thus offer an ideal tool for the optical characterization of emerging low-dimensional materials and biological-systems. In s-SNOM, an incident THz beam is focused on a sharp atomic force microscope (AFM) metallic tip strongly confining the THz radiation in the near-field region of its nanometric apex. Nanoscale resolved (10 - 100 nm) optical images can be retrieved by analysing the scattered THz radiation as a function of tip position, placing the tip in close proximity to the sample surface. Both amplitude and phase contrast information can be obtained by employing interferometric techniques. These methods, however, increase the complexity of the experimental arrangement by introducing additional optical components such as modulators, translators, beam splitters and, particularly, detectors, which, in the THz spectral range, usually rely on cryogenically cooled bolometric systems to retrieve the typically low intensity signals.
Progress in the field is therefore restricted by the lack of compact, room-temperature and fast detection systems and appropriate passive optical components for THz frequency operation.

During the first year period of the Balzan proposal, the problem was tackled by conceiving a simple, potentially compact, detector-less s-SNOM system that operates in the self-detection (SD) mode. It features a THz QCL that senses the backscattered optical field through a voltage modulation induced inherently through the self-mixing technique.

To provide a proof-of-principle of the amplitude and phase contrast imaging capability of the SD-s-SNOM, a polar crystal (CsBr), which exhibits a strong phonon-polariton (Reststrahlen) resonance in the 2.2 – 3.3 THz range was selected. This demonstrates amplitude-and-phase-resolved background-free SD-s-SNOM imaging with a spatial resolution comparable to the scattering tip size, providing a key step forward to make THz nanoscopy a widely used tool.

Finally, the capability of the team’s SD-s-SNOM to image doped van der Waals layered materials was demonstrated. To this purpose, they selected hBN/graphene/hBN heterostructures and black phosphorus (BP), a technique which made it possible to unveil acoustic photons at THz frequencies in graphene, by capturing gate dependent s-SNOM signals in double-gated FETs and to determine carrier concentrations in Se-doped BP via optical contrast effects in the far-infrared.

Associated publications


Project 2: Quantum Effects in Complex Systems (‘Q-EX’)

Institution: Princeton University, Princeton, NJ; Polytechnic University of Milan
Supervisor: Federico Capasso
Proposed beneficiary: Dr. Margherita Maiuri (Chemistry, Princeton University, and Physics, Polytechnic University of Milan)
This project is inspired by the hypothesis that, if nuclear motion influences quantum dynamics of natural and bio-inspired molecular systems, it should be possible to extend the similar argument to the study of exciton dissociation in 2D materials and their hetero-structures. The key hypothesis of vibronically assisted charge separation in 2D heterostructures still lacks experimental evidence. Direct observation of the complex quantum dynamics at the 2D TMD interface will be one of the challenges of Q-EX project, with the outcome of generating important photo-physical insights and suggesting design principles for operation of ultrathin devices under non-equilibrium conditions.

Introduction

Recent advances of ultrafast laser spectroscopy have promoted deep studies of quantum effects in complex systems where excitons – correlated electron-hole pairs – play a central role in light-triggered dynamics. In the excitonic picture, the spatial extent of an electronic excited state is increased thanks to a coherent sharing of the excitation among subunits of the system. This quantum-mechanically coherent superposition of states evolves in time and, if strong, can be observed by spectral features that are perturbed, shifted, or split. These properties are determined by electronic coupling among the repeat units forming the material and strongly depend on the type of complex system involved.

Since these discoveries, the idea of quantum coherence in charge and energy transport has been extended and established from biology to a number of other photovoltaic materials and nanoscale systems. Particularly important are atomically thin two-dimensional materials, such as graphene and transition-metal dichalcogenides (TMD) MX2 (M = Mo or W, X = S, Se), which have come into the spotlight due to their outstanding physical properties. The extremely high carrier mobility of graphene and the tunable direct band gaps of TMDs highlight the crucial role that quantum confinement can have in producing several technologically relevant electronic properties.

Summary of specific objectives

Q-EX aims to explore the roles that nuclear motions play in the ultrafast exciton dissociation in two different complex systems, going beyond the framework of classical electron transfer Marcus theories. The project has two main objectives:
(a) the study of excitonic many-body effects in 2D materials and their heterostructures;
(b) the study of vibronic coupling in bio-inspired molecular arrays.

Summary of results

1. Excitonic Interactions in 2D Materials and their Heterostructures (Politecnico di Milano)

The extremely high carrier mobility of graphene and the tunable direct band gaps of TMDs highlight the crucial role that quantum confinement can have in producing several technologically relevant electronic properties. Due to the low dielectric constants and the strong quantum confinement effects, Coulomb force is poorly screened in single-layer TMD materials, so that the excitons created by photoexcitation have huge binding energy, up to 1 eV. In the single-layer (1L) limit, they exhibit an indirect-to-direct band gap transition, which is accompanied by efficient light emission in the NIR-visible range. In addition, the coupling of spin and valley degrees of freedom gives rise to valley-selective optical properties. TMDs offer also the exciting possibility of creating heterostructures, obtained by stacking one material on top of the other. Such systems, which are analogous to classical semiconductor heterostructures, display rich optoelectronic properties due to the bandgap mismatch of the different components.

During the first year of the project the team developed a multidimensional ultrafast optical technique, namely two-dimensional electronic spectroscopy (2DES) to understand the non-equilibrium optical properties of TMDs and their heterostructures. They are able to report one of the first 2DES measurements obtained on a 1L MoS2 sample, provided by collaborations with the Cambridge Graphene Center (Prof. Andrea C. Ferrari). 2DES is the elective tool for the experimental studies of this project, since it measures energy/electron transfers and electronic couplings in multi-absorbing systems. Thanks to its main advantage of providing simultaneously high temporal and spectral resolution, it is possible to disentangle spectrally congested features, such as the different electronic transitions in complex systems and many body effects.

In 2DES three consecutive incoming pulses, with two separate controllable delays impinge on a sample. This interaction creates a nonlinear polarization that emits a field from the sample, after a delay t. The emitted field can be fully resolved in
amplitude and phase when it interferes with a fourth pulse (local oscillator) or with the third pulse by itself. By Fourier-transforming the signal with respect to the first tau and t at a fixed T delay, one can retrieve a 2D map as a function of excitation and detection frequency for a specific delay T. By correlating excitation-detection axes, it is possible to track the energy flow dynamics and detect electronic couplings between excited states.

Their preliminary results show three 2DES maps at specific T delays. These preliminary data, combined with deeper analysis and supported by calculation, might help to better understand the intricate ultrafast transient response in prototypical 1L TMD, such as bandgap renormalization and Coulomb exchange interactions. This is a crucial step before moving on to the study of the heterostructures.

Associated outcome


2. Vibronic Coupling in Bio-Inspired Molecular Arrays (Princeton University)

Organic small molecules, such as tetrapyrroles, play crucial roles in numerous processes in nature, serving as cofactors in proteins where they have several functions. For example, chlorophylls (which contain magnesium ions) are responsible for photosynthetic electron and energy transfer, whereas hemes (which are iron porphyrins) contribute to the transport of diatomic gases. Synthetic porphyrins are exploited for artificial light harvesting, ultrafast electron transfer in donor-acceptor complexes, and in organic solar cells. Characterizing the photoinduced ultrafast processes involved in these molecules is necessary for understanding such processes.

During the first phase of Q-EX project, Dr. Luca Moretti has been appointed as Visiting Associate Researcher at Princeton University to study the electronic interaction in artificial tetrapyrroles arrays. First results report on a comprehensive pump-probe investigation on recently synthetized arrays of zinc porphyrins (containing from two
to six molecules) which have been shown strong excitonic interactions. The samples will be provided by Prof. Gust, Prof. Ana Moore, Prof. Tom Moore (Arizona State University).

Associated outcome

Reconstitution of Exocytosis Using Synthetic Vesicles in Intact Cells

Reinhard Jahn
2016 Balzan Prize for Molecular and Cellular Neuroscience

Balzan GPC Advisers: Erwin Neher, Peter Suter
Principal Investigator: Reinhard Jahn
Deputy Principal Investigator: Hans-Dieter Schmitt
Affiliated Institution: Department of Neurobiology, Max Planck Institute for Biophysical Chemistry
Period: 2017-2020

Reinhard Jahn is Director of the Neurobiology Department at the Max Planck Institute for Biophysical Chemistry.

Neurons communicate with each other by the release of small molecules, the neurotransmitters. Upon arrival of an action potential within a nerve terminal, voltage-gated calcium channels open and trigger exocytosis of synaptic vesicles, during which the stored transmitter molecules are discharged. In recent years, the molecular components responsible for exocytosis have been identified. However, it is still unclear how these proteins cooperate to mediate exocytosis. To better understand how the proteins mediating exocytosis operate, the reconstruction of exocytosis in a “naive” cell is planned. Two doctoral students will carry out the experiments using an approach to micro-inject either purified native secretory vesicles or artificial vesicles containing defined components into intact cells and monitor the conditions under which these vesicles are capable of docking and fusion. Jahn’s project expects fundamental insights into the requirements of vesicle docking and fusion in general and into the specific conditions for calcium-dependent exocytosis in neurons.

Jahn’s team plans to reconstruct regulated, neuron-like exocytosis by testing the hypothesis as to whether it suffices to equip a non-neuronal cell with the correct SNARE proteins required for exocytosis in order to reconstitute calcium regulated
exocytosis of artificially introduced vesicles. It is hoped that this project will provide answers to basic and longstanding questions in the field, including what it takes to convert a standard, non-secretory cell into a cell capable of undergoing regulated exocytosis, and furthermore, what the minimal requirements for a vesicle to function as a synaptic/secretory vesicle in calcium-dependent exocytosis are.

The project will be carried out in the Department of Neurobiology at the Max Planck Institute for Biophysical Chemistry, Göttingen, Germany. Two doctoral students will work collaboratively under the supervision of the Principal Investigator, Reinhard Jahn. The first student will be mainly involved with the generation, characterization and labeling of the vesicles. This part will also involve in-vitro imaging of the vesicles after surface immobilization. The second student will mainly carry out microinjection experiments and perform the microscopic analysis for vesicle transport, docking and fusion.

The start of the project was set as 1 October 2017, and it is planned to end in the fall of 2020. Results of this work will be published in peer-reviewed scientific journals, and the Balzan Foundation will be acknowledged as funding source.
Balzan Fellowship for a Postdoctoral Researcher

Francis Halzen

2015 Balzan Prize for Astroparticle Physics
including neutrino and gamma-ray observation

Balzan GPC Advisers: Bengt Gustafsson, Luciano Maiani
Deputy Supervisor: Kael Hanson
Balzan Fellow: Daan Van Eijk
Affiliated Institution: Wisconsin IceCube Particle Astrophysics Center (WIPAC) at the University of Wisconsin-Madison
Period: 2016-2019

Francis Halzen is Hilldale and Gregory Breit Distinguished Professor at the University of Wisconsin-Madison and Director of its Institute for Elementary Particle Physics.

The Wisconsin IceCube Particle Astrophysics Center (WIPAC) at the University of Wisconsin-Madison has created the Balzan Fellowship for an outstanding postdoctoral candidate to work with the IceCube neutrino experiment, with special emphasis on future technologies and/or multi-wavelength campaigns to advance the future of neutrino astronomy.

The IceCube Neutrino Observatory is the first detector of its kind, designed to observe the cosmos from deep within the South Pole ice. It does so by recording the interactions of a nearly massless subatomic particle called the neutrino. IceCube is also the world’s largest neutrino detector, encompassing a cubic kilometre of ice. The neutrinos come from the most violent astrophysical sources, like exploding stars, gamma-ray bursts, and cataclysmic phenomena involving black holes and neutron stars. Thus, the IceCube telescope is a powerful tool to search for dark matter, and could reveal the physical processes associated with the enigmatic origin of the highest energy particles in nature. Moreover, by exploring the background of neutrinos produced in the atmosphere, IceCube studies the neutrinos themselves; their energies far exceed those produced by accelerator beams.
After an extensive international search, Daan Van Eijk was selected as the Balzan Fellow. Van Eijk was previously employed as a scientist at NIKHEF, Amsterdam, as coordinator of the integration of KM3NeT digital optical modules. The DOM, which is shorthand for digital optical module, is the basic detection element of the KM3NeT neutrino detector. Van Eijk is a member of the KM3NeT Steering Committee. He contributes to the commissioning and data analysis of the first deployed DOMs, and his goal is to eventually work on the KM3NeT physics program to determine the neutrino mass hierarchy using atmospheric neutrino oscillations. His PhD research was performed at CERN, studying CP-violating decays using data from the LHC-B detector.

Van Eijk joined WIPAC in July 2017. Before taking up his position, his research program was planned and KM3NeT was under construction in the Mediterranean. Like IceCube, KM3NeT is a kilometer-scale neutrino detector, but the design of its photosensors is different. The same design is now being considered for the next-generation IceCube detector, and Van Eijk’s expertise will be valuable for future decisions on sensors.

Telescopes evolve. AMANDA, an experiment preceding IceCube, provided proof of concept for a kilometer-scale detector by observing atmospheric neutrinos using natural ice as a particle detector. IceCube’s discovery of a large flux of cosmic neutrinos has triggered the development of a next-generation instrument capable of observing thousands rather than hundreds of events in several years. It would turn discovery into astronomy. The experience gained with IceCube has augmented the capability to instrument a ten-times-larger volume of ice on a budget similar to the one for IceCube. Daan Van Eijk presently participates in completing the design of the instrument. He has already completed an extensive study of novel photomultipliers that are considered for the next-generation detector. A publication covering the research is in preparation. In the same context, novel technologies that do not necessarily involve the IceCube technique will also be researched, such as radio detectors and horizontal cosmic ray air shower arrays. With Van Eijk as a Balzan fellow at the lead institution of the IceCube project, there are hopes to further the excellent support and coordination that characterize the current collaboration between the IceCube and the European KM3NeT.
Microbial Processes at Ocean Station ALOHA

David M. Karl

2015 Balzan Prize for Oceanography

Balzan GPC Advisers: Enric Banda, Charles Godfray
Researchers: Sara Ferrón, Benedetto Barone
Affiliated Institution: Ocean Station ALOHA (A Long-term Oligotrophic Habitat Assessment)
Period: 2016-2018
Websites: hahana.soest.hawaii.edu; scope.soest.hawaii.edu; cmore.soest.hawaii.edu

David M. Karl is Professor of Oceanography at the School of Ocean and Earth Science and Technology at the University of Hawaii at Manoa and Director of the University of Hawaii’s Center for Microbial Oceanography: Research and Education.

Ocean Station ALOHA (A Long-term Oligotrophic Habitat Assessment) is a novel oceanographic research site located approximately 100 km north of Oahu, Hawaii, in the North Pacific Subtropical Gyre, one of Earth’s largest habitats. On approximately monthly intervals since October 1988, interdisciplinary teams of scientists from institutions worldwide have studied the biology, physiology and ecology of microorganisms, from genomes to biomes. Research at Ocean Station ALOHA has helped to define the new and exciting discipline of Microbial Oceanography. The numerous scientific discoveries from Ocean Station ALOHA, including novel microorganisms, unprecedented metabolic pathways and complex interactions, have transformed our understanding of microbial life in the sea. The uncertain nature of future climate change and the potential impacts on the structure and function of marine ecosystems demand a comprehensive description and understanding of the sea around us. Sustained research of marine microbes is vital, so continued field observations and experimentation at Ocean Station ALOHA are both timely and important.

Since the start of the Balzan Prize Research Project Microbial Processes at Ocean Station ALOHA, significant progress has been made toward the stated project goals. First, in line with the general aims of the field of microbial oceanography, the project

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aims to observe and understand microbial life in the sea well enough to make accurate ecological predictions, for example, of the impact of climate variability on microbial processes in the global ocean. At the same time, the project will also provide novel opportunities to move the field forward by using the new observational and analytical techniques, in part developed or refined in David Karl’s laboratory over the past two decades. Two early career scientists, Drs. Benedetto Barone and Sara Ferrón, have been collaborating on several aspects of laboratory-based methods development and at-sea observations and experimentation. More importantly, a comprehensive effort in data synthesis and interpretation has led to the publication of several important scientific papers and new knowledge has been created and disseminated. Several additional research papers are in various stages of completion.

Benedetto Barone, the inaugural recipient of the Balzan Research Fellowship at the University of Hawaii, has continued his investigations of the use of autonomous underwater vehicles to measure the variability of microbial processes in the sea. A manuscript on this important topic has been favourably reviewed and is currently being revised for publication in the *Journal of Geophysical Research – Oceans*. Barone gave a preliminary presentation at the International Aquatic Sciences meeting in Honolulu HI, USA, in March 2017. Barone was also selected to lead a major research expedition to investigate the ecological and biogeochemical consequences of mesoscale eddies. This international expedition is funded primarily by the Simons Foundation with partial support from the US National Science Foundation and David Karl’s Balzan Prize. Barone and Ferrón, funded by the 2015 Balzan Prize in Oceanography, will be among the complement of 23 international scientists and technicians.

Sara Ferrón, a research associate at the University of Hawaii, is partially (50%) supported by the Balzan research award. She has become an invaluable member of the team and has already made major contributions to the project. Last year, she developed a novel approach to measure gross primary production (GPP) using a shipboard membrane inlet mass spectrometer (Ferrón et al. 2016). Since that time, she has amassed the largest data set ever on GPP at Station ALOHA, and will soon submit a manuscript describing this novel time-series. She has also been active in several other relevant research projects including, but not limited to, experimental determination of bacterial respiration, measurements of the concentrations of methane and nitrous oxide (two potent greenhouse gases) in seawater, and studies of hydrocarbon gas production during the decomposition of commercial plastics.
Manuscripts published or submitted


Presentations or published abstracts

Subtropical Gyre. ASLO Aquatic Sciences Meeting (040), Honolulu, HI, February-March 2017.


Curless, S. E., Church, M. J., Segura-Noguera, M., Karl, D. K. Ammonium concentrations at Station ALOHA - Improved methodology allows for full ocean depth analysis. ASLO Aquatic Sciences Meeting (040), Honolulu, HI, February-March 2017.

Ferrón, S., Barone, B., Church, M. J., Karl, D. M. Biological oxygen production in the North Pacific Subtropical Gyre. ASLO Aquatic Sciences Meeting (040), Honolulu, HI, February-March 2017.


Grabowski, E. M., Karl, D. M. Caloric content of Sinking particulate matter in the North Pacific Subtropical Gyre. ASLO Aquatic Sciences Meeting (040), Honolulu, HI, February-March 2017.


Sadler, D. W., Barone, B., Burkitt, J. W., Dore, J. E., Church, M. J., Karl, D. M. High-resolution in-situ pH measurements at Station ALOHA using an ion-sensitive field effect transistor. ASLO Aquatic Sciences Meeting (040), Honolulu, HI, February-March 2017.


Computing Three Dimensional Fluids

Dennis Parnell Sullivan
2014 Balzan Prize for Mathematics (pure/applied)

Balzan GPC Adviser: Étienne Ghys
Project Director: Dennis Sullivan
Deputy Director: Theodore Drivas
Researchers: Aradhana Kumari, Nissim Ranade, Robert Rohan, Minh Nguyen
Affiliated Institutions: SUNY Stony Brook; City University of New York (CUNY); Princeton University
Period: 2016-2019

Dennis Parnell Sullivan is Albert Einstein Visiting Professor of Science at CUNY Graduate Center and Distinguished Professor of Mathematics at Stony Brook University. Theodore Drivas is in the Math Department at Princeton University, specializing in Fluid Mechanics and PDE.

In order to compute fluid motion, any continuum fluid model must be discretized in terms of finitely many parameters. Discretizing space by dividing it into cells was Poincaré’s starting point when he invented topology to study qualitative dynamical systems just over one hundred years ago. In the middle of the twentieth century, great advances were made in algebraic topology, which is also based on these cells. These advances are related to the algebraic products that are involved in the discretization process for the nonlinear term of the fluid models.

When discretizing continuum models, certain algebraic symmetry in the continuum models is broken. This loss of symmetry is repaired by a hierarchy of corrections based on algebraic topology. These corrections are similar to the Feynman diagrams used in the algorithms to compute physical effects in quantum theories.

Sullivan and his student colleagues have been engaged in understanding these corrections and building theoretical machinery for fluid computations based on these ideas. This work led to the revelation/understanding that different ways of discretizing vari-
ous rewritings of the continuum model which are equivalent at the ideal level can be inequivalent at the discrete level.

There is coherence, however, if one allows for the extended sequence of corrections alluded to above. Systematically testing fluid data against the various algorithms in terms of these extended corrections would be beneficial. With the second part of his Balzan Prize, Sullivan has initiated testing the practical aspects of this theoretical work.

The construction of the algorithm for computing incompressible fluid motion, which replaces the continuum language by that of combinatorial topology, has been completed. One interesting point is that the algorithm is first derived from a tautologous conservation principle on an FCC lattice which is multiply covered by all cells of edge length twice the lattice scale. The algorithm is, however, NOT derived from the continuum model but derived directly. However, the primary or basic algorithm tends as the scale tends to zero to the continuum model written in the Leray form. This is the form which allows the definition of generalized and statistical solutions. The idea now is to imagine the algorithm to be written at such a small scale [above the atomic scale] that the momentum vectors on each face are essentially constant. Then the lattice and algorithm are amalgamated as in Wilson renormalization to reach a coarser level where computation is feasible. The cumulants of this process can be fit with the above mentioned hierarchical corrections [Thesis of Nissim Ranade]. A description of the basic or starting algorithm will appear in the memorial volume for Jean-Christophe Yoccoz, Collège de France, entitled “Lattice Hydrodynamics”. See also Dennis Sullivan’s presentation of “Lattice Hydrodynamics” at the Simons Center for Geometry and Physics Video Portal.

Sullivan’s Balzan research project is primarily based at Stony Brook University, with parts being carried out at the Graduate Center of the City University of New York. The cooperation with Theodore Drivas of Princeton University marks a new beginning for the project. A conference, “Real Fluids in dim ≤ 3 | Complex Manifolds in dim ≥ 3”, was held at the CUNY Graduate Center in April 2018. For further details, see simons-mathfest2018.ws.gc.cuny.edu.

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Biodiversity: 
Causes, Consequences and Conservation

G. David Tilman
2014 Balzan Prize for Basic/applied Plant Ecology

Balzan GPC Adviser: Charles Godfray
Project Director: David Tilman
Researchers: Matthew G. Burgess, Jane Catford, Adam T. Clark, Michael Clark, Jane M. Cowles, George Furey, Kaitlin Kimmel, Delphine Renard, David W. Williams, Yi Yang
Affiliated Institution: University of Minnesota
Period: 2015-2020

G. David Tilman is Regents Professor and McKnight Presidential Chair in Ecology at the University of Minnesota and Director of the Cedar Creek Ecosystem Science Reserve. He is also Professor at the University of California-Santa Barbara and Honorary Professor at the China Agricultural University in Beijing. Tilman has spent his career pursuing answers to three major scientific questions related to biodiversity. First, why is life so diverse? Second, how do changes in biodiversity impact the productivity, stability and other ways that ecosystems function? And finally, why and how are human actions leading to the loss of biodiversity, and how might such losses be minimized or prevented?

In trying to answer these questions he has formulated a “universal tradeoff” hypothesis, which suggests that a deep underlying unity of causation explains why the world became so diverse and why biodiversity has such large impacts on how ecosystems function.

The second half of Tilman’s Balzan Prize is being used for a project in which he is working with younger scholars to address three issues related to this “universal tradeoff” hypothesis and its implications:
1) how do evolutionary and ecological processes interact to cause coexistence or
competitive displacement, and to determine which species can invade into new regions;
2) why are the effects of biodiversity on ecosystem functioning so unexpectedly large;
3) what are the mechanisms whereby human actions cause species extinctions, the number of species so threatened, and ways to prevent such extinctions.

1. Causes of Biodiversity
Theory predicts that high biodiversity – particularly the long-term coexistence of many competing species – requires that all coexisting species have tradeoffs in their traits. Tilman’s research has pursued the goal of testing the applicability of this universal tradeoff hypothesis using both experimental and observational approaches. For both cases, data gathered on the traits of plant species were used to predict species abundances or species diversity when many different plant species compete with each other. Work currently in progress is expanding such studies to include herbivory and predation along with competition.

2. Why are Biodiversity Effects so Large?
Current mathematical theory predicts that the productivity of a plant community is an increasing function of its plant diversity. However, the observed effects of diversity on productivity in long-term experiments are much greater than theory predicts. Analyses of experimental data suggest that current theory omits a major factor. The initial diversity-dependent increase in productivity has a positive feedback effect on soil fertility, and this increased soil fertility causes productivity to increase through time. Tilman and his researchers are working to modify theory to include this feedback effect.

3. Causes of Extinctions, and Ways to Prevent Extinction
Because of the urgency of global, human-caused extinction risks, much of our efforts have focused on various aspects of this issue. Existing evidence and related mathematical theory on human-caused extinction threats are being synthesized, with the aim of testing existing theories and seeking new theories that can integrate the simultaneous effects of multiple stressors to predict their interactive effects on extinctions. Tilman’s group has found that the greatest single current and future threat to biodiversity is caused by the ways that humans meet their food needs. They have also identified how both expansion of classical conservation methods and how adoption of pro-active conservation policies aimed at preventing further land clearing and halting “bushmeat” hunting could help prevent extinction of the Earth’s remaining large animals.
Publications


Quantum Information Processing and Communication: Quantum Information with Photons and Atoms

Alain Aspect

2013 Balzan Prize for Quantum Information Processing and Communication

Balzan GPC Adviser: Luciano Maiani
Researchers: Chris Westbrook (Research Coordinator); David Clément, Marc Cheneau; Sébastien Tanzilli (YQIS project)
Affiliated Institution: Institut d’Optique Graduate School (IOGS)
Period: 2016-2017
Website: http://www.lcf.institutoptique.fr/Alain-Aspect-homepage

Alain Aspect is Professor at the Institut d’Optique Graduate School and the École Polytechnique in Palaiseau, and CNRS Distinguished Scientist Emeritus at the Laboratoire Charles Fabry at the Institut d’Optique.

Aspect proposed two projects for the use of the second half of his Balzan Prize. The first was to promote a series of conferences, Young Quantum Information Scientists (YQIS), based on the model of the Young Atom Opticians conference launched by Professor Aspect and Professor Mlynek over twenty years ago to enable PhD students and postdoctoral scholars working in cold atoms to gain experience by organizing conferences and creating a European community. The first edition of YQIS, initiated by Alain Aspect together with Sébastien Tanzilli of the Laboratoire de Physique de la Matière Condensée at Nice (CNRS and Université Nice Sophia Antipolis), France, was held at the Institut d’Optique Graduate School in Palaiseau, France. As a conference “made by young researchers for young researchers (PhD students and postdoctoral fellows)”, YQIS makes it possible for young research fellows to exchange ideas and to communicate their research in the newly recognized field of Quantum Information. The conference was a great success, and although it was held immediately after the terrorist attacks of November 2015 in Paris, almost all of the eighty registered
participants from many different countries showed up, and demonstrated their ability to form a genuine community.

The definitive mark of the success is the fact that the second and third editions of YQIS were held in Barcelona in 2016 (http://yqis16.icfo.eu/) and in Erlangen in 2017 (https://yqis17.sciencesconf.org/). As foreseen in the project, the conference has taken on its own impetus, but the Balzan Prize played a crucial role in its establishment.

The second proposal was to fund two young researchers, David Clément and Marc Cheneau, for projects on quantum simulators of quantum correlated matter. Quantum simulators are a variety of quantum computers proposed by Feynman in his milestone paper on quantum information. They consist of realizing systems to emulate quantum systems very difficult to study directly. Ultra cold atoms placed into optical potentials realized with laser beams are remarkable examples of such simulators, giving access to quantum properties of entangled many-body systems of condensed matter.

Marc Cheneau’s project concerns a cold atoms quantum simulator of supersolids, and he intends to measure directly spatial correlations with resolution, enabling him to see each individual atom. The experiment started from scratch, and it is still under development. Until now, the funding allocated to the project led by Marc Cheneau was used mostly to set up the lab room by purchasing such equipment as research grade optical tables to set up the laser system and the vacuum apparatus. It was also used to purchase various electronic equipment, such as a custom high-speed Pound-Drever-Hall locking module, to lock one of the lasers on a high-finesse optical cavity. The funding is not yet exhausted, and will continue to serve as a resource for achieving the construction of the apparatus, expected towards the end of the year 2019. In the meantime, Marc Cheneau was awarded an ERC Starting Grant for his research project, and the funding by the Balzan Foundation definitely played a role in this success by strengthening the credibility of the application.

David Clément’s project concerns a quantum simulator of a strongly interacting quantum atomic gas, with the primary goal of measuring how quantum depletion depends on the strength of the interactions. This has been achieved, and the Balzan Foundation is acknowledged in the two corresponding publications (Bouton et al., Phys. Rev. A 2015; Chang et al. Phys. Rev. Lett. 2016).
Balzan funds have then allowed passage to a new stage, funding an Italian postdoctoral researcher’s first year (Marco Mancini), and buying a laser and optics to implement an optical lattice on the Bose Einstein condensate of metastable helium. The installation of the optical lattice is completed, and the first experimental signals of atoms released from the lattice are currently being recorded.

In conclusion, the Balzan Prize funds have played a major role in starting three different projects:

1. Launching a new series of conferences for young researchers in quantum information science: YQIS
2. Starting from scratch a new experiment on quantum simulation of supersolids

As a final note, it must be emphasized that the Balzan funds from Aspect’s Prize were not only essential for the success of this project, but also facilitated the additional funding necessary to continue each of the three programmes.
Epigenetics and Bacterial Infections: 
The Role of a Novel Histone Deacetylase SIRT2

Pascale Cossart

2013 Balzan Prize for Infectious Diseases: Basic and Clinical Aspects

Balzan GPC Advisers: Jules Hoffmann, Peter Suter
Main Researcher: Melanie Hamon (Research Coordinator)
Affiliated Institution: Institut Pasteur
Period: 2014-
Website: http://research.pasteur.fr/en/team/bacteria-cell-interactions

Pascale Cossart is Director of the Unité des Interactions Bactéries-Cellules and Professeur de Classe Exceptionnelle at the Institut Pasteur, Paris. She is also secrétaire perpetuel to the Académie des sciences in Paris. Her project will further investigate recent results obtained in epigenetics and bacterial infections, a new research area in infection biology. In order to establish a successful infection, bacteria manipulate the host chromatin structure, dynamics and function to their own profit. Bacterial pathogens can manipulate chromatin directly by addressing factors that interact with histones or other chromatin components to the nucleus, or indirectly by interacting with signalling pathways which then affect the chromatin structure or dynamics. The Cossart team’s research has recently shown that the bacterial pathogen *Listeria monocytogenes* infection induces the nuclear translocation of SIRT2, an event dependent on the interaction between the bacterial protein InlB and its receptor Met on the cell surface and critical for a successful infection *in vivo* as shown by the resistance to infection of SIRT2-/- mice.

A graduate student and a postdoctoral fellow carried out the project, which has four aims: to elucidate the mechanism underlying SIRT2 nuclear translocation induced by *L. monocytogenes* infection; to investigate the genome-wide impact of SIRT2-induced H3K18 deacetylation during infection with *L. monocytogenes*; to determine whether H3K18 deacetylation by SIRT2 is a common strategy used by other pathogens for host subversion; to determine whether *L. monocytogenes* infection induces an epigenetic memory in the host.
Cossart’s team has now discovered a novel post translational modification of SIRT2, i.e., dephosphorylation of SIRT2 at position 25, which is critical for association of SIRT2 to the chromatin. This dephosphorylation occurs in the nucleus via a complex made of the phosphatases PPM1A and PPM1B. Therefore, their studies have uncovered a novel strategy used by a pathogenic bacterium to reprogram host transcription during infection, thereby providing a new insight into a previously unknown cellular process, and revealing a new role and function for several cellular proteins (i.e., SIRT2, PPM1A and PPM1B). A new post-doc is investigating the import of SIRT2 in the nucleus which is independent of the infection. Mélanie Hamon is now extending these studies to another pathogen, *Streptococcus pneumoniae*.

The work realized by the Balzan Prize has thus led to an important set of data and a major discovery which was published in Cell reports in 2018. This work allowed Jorge Pereira to present and defend a PhD thesis in November 2017. Pereira has already been accepted as a postdoctoral fellow in the laboratory of Mélanie Blokesch at EPFL in Lausanne, Switzerland, where he has already given a seminar. The work was also presented by Melanie Hamon at an EMBO workshop on Epigenetic mimicry in Paris in June 2017 and at a Keystone meeting in 2018. Melanie Hamon is now heading a junior group entitled “Chromatin and infection” at the Pasteur Institute.
Further Investigation of Epigenetics in Hybrids and Evolution

David Charles Baulcombe

2012 Balzan Prize for Epigenetics

Balzan GPC Adviser: Marc van Montagu
Affiliated Institution: University of Cambridge
Period: 2013-

David Charles Baulcombe is Regius Professor of Botany, Royal Society Research Professor and Head of the Department of Plant Sciences at the University of Cambridge. His two-part project is designed to address fundamental questions in biology using a genetic and molecular approach. It is also intended to introduce young scientists to the statistics and computational aspects of handling large datasets related to genome-wide profiling of epigenetic modification, gene expression and genome sequence. The advent of high throughput sequencing technology has been transformational in biology, and their ability to use the resulting datasets is essential for their career progression as research scientists.

Part I is based on recent discoveries from Baulcombe’s laboratory determining that epigenetic marks affecting gene expression are initiated in the genomes of hybrid organisms. It will have two stages. The first stage will involve dissection of an epigenetic change that has already been observed, to be initiated in hybrids between the tomato – *Solanum lycopersicum* – and a wild relative – *S. pennellii*. When completed, the conclusions will give a baseline for the analysis of other loci that will be identified in the second stage, which will involve genome-wide characterisation of genetic and epigenetic changes in the *lycopersicum pennellii* hybrids. This research will indicate the extent to which induced epigenetic changes might affect the phenotype of the hybrid plants.

Part II exploits the unicellular green alga – *Chlamydomonas reinhardtii* – to investigate the role of epigenetic mechanisms in adaptation. The aim of the experiments is to test
a hypothesis related to soft inheritance, asking whether algae that are defective in soft inheritance are compromised in the ability to adapt to an altered environment. The first stage will characterise mutant and knock down lines of *C. reinhardtii* for epigenetics and RNA silencing. In parallel with this molecular biology preparation, a series of long-term culture experiments will be set up in which cultures are subject to mild stress herbicides and high CO$_2$. The detailed experimental regime will be designed in collaboration with Sinead Collins (Edinburgh Institute of Evolutionary Biology), and will take account of previous studies in which *C. reinhardtii* cultures were adapted to these stresses.
Sea-level Change during Glacial Cycles

Kurt Lambeck
2012 Balzan Prize for Solid Earth Sciences, with emphasis on interdisciplinary research

Balzan GPC Adviser: Enric Banda
Researchers: Anthony Purcell, Hélène Rouby
Affiliated Institution: Australian National University
Period: 2013-2018

Kurt Lambeck is Emeritus Professor at Australian National University. He is currently (2018) also visiting professor at both the Instituto Nazionale di Geofisica e Vulcanologia in Rome, Italy, and at the Department of Geology, Lund University, Sweden. The research component of the second part of his Balzan Prize addresses three important elements of the broad subject of sea-level change.

The first involves geophysical modelling of interactions between ice sheets, the solid earth and sea level. One of the goals of the project is to develop a version of the numerical models suitable for use by ‘non-experts’, so as to make the methodology available to geologists and archaeologists. Another goal is to develop the next iteration of ice sheet models with a particular focus on the Antarctic ice sheet, which up to now has played a rather passive role in the discussion of past sea levels, despite its being important in assessing the future of this ice sheet in a framework of a warming planet. Other targets include an improved ice sheet model for southern Greenland and improvements in the North American ice sheet model. These models provide improved reference points for testing climate models under conditions very different from today as well as the basis for palaeogeographic reconstructions during recent glacial cycles to explore possible constraints on human migrations. A major step forward has been the publication of the new ice sheet model for North America from the time of the last Glacial Maximum to the end of deglaciation. The significant outcome has been the establishment of operational models for the mantle viscosity. Current related research includes the analysis of geodetic data pertinent for understanding the earth’s response to this glacial system, and continuing work on the Antarctic ice history.
The second element, dealing with past interglacials as analogs of the present interglacial, has been temporarily suspended because of a shift in priorities, but it remains important. Of these, the most significant is the Last Interglacial some 120,000 years ago because its traces are best preserved in the geological record. Its climate was similar to today, but possibly a few degrees warmer, and sea levels were 4-6 meters higher than today. But the precise timing of this occurrence and any variability within the interglacial interval remains poorly constrained. Yet this information is important in the context of current climate change debate for understanding the sensitivity of ice sheets to changes in temperature. Field sites for which the team had collected new information include: Western and Northern Australia, the Seychelles, and the Mediterranean. Currently Lambeck’s researchers are examining some new evidence from southernmost South America.

The third theme is the present interglacial (the Holocene). Ocean volumes have remained approximately constant during the past 6,000 years, but periodically the argument arises that large amplitude (1-2 m) changes have occurred within relatively short time periods (a few hundred years). If correct, this has major implications for the instability of the climate system when the planet is not in an ice age. There are many reasons why this question remains debated. One is of the nature of the observational evidence. Another is land movement caused by tectonic and global dynamic processes. A third is the ongoing interaction between the past ice sheets and the solid earth and oceans. New observational evidence from Tasmania has been collected. Along with a re-analysis of Roman-epoch archaeological data from the Mediterranean, this evidence will address the question of the sea-level (and hence climate) stability or instability during the current interglacial period that forms the background to any anthropogenic contributions.

Lambeck’s Balzan Prize funding has provided for the support of two researchers at the Australian National University (ANU) to work on the modelling aspects of the various components of the earth-ocean-ice system. One is the mid-career researcher Dr. Anthony Purcell; the other, a more junior researcher, Dr. Helene Rouby. Purcell has developed a good track record as an independent researcher who is able to attract his own research funds. For Rouby, Balzan funds have mainly been used to partly fund her first two years in France at the École Normale Superiûre, a number of extended visits stays in Canberra, participation in workshops, and support of on-going research. She has been able to successfully interact with archaeologists and geologists on questions of how the past changes in sea level impact on the
interpretation of their observations, as well as with geodesists on understanding some of the earth-ocean-ice system’s processes that impact observations of the Earth taken from satellites. Both scholars exemplify the interdisciplinary research recognized in Lambeck’s Balzan Prize.

Funding has also been directed towards supporting young researcher fieldwork in several areas: the Seychelles; support for Ms. Y. Y Sun for an extended stay in Canberra to learn about extracting earth-information from observations of sea-level change; field support including laboratory work to support Ms. Brigid Morrison for the Tasmanian work; laboratory dating work in support of archaeological-geological investigations in the Red Sea as part of a project to determine environmental conditions in this area during pre-history times of exodus from Africa (run by York University); and support for a young student to attend a summer school on underwater archaeology (run by the University of Geneva, where Lambeck has been lecturing) that will lead to ongoing work in Greece.

As mentioned, current work includes a reexamination of the Mediterranean evidence, including new fieldwork integrating geology and archaeology. With a portion of the funds still available, Lambeck will make a renewed attempt at organizing a meeting of young archaeology and geology researchers working in the Greek and Italian parts of the Mediterranean.

Publications


The Balzan Prizewinners’ Research Projects:

2001-2011
Literature, Moral Sciences, and the Arts
A Critical Dictionary of Utopia in the Century of the Enlightenment

Bronislaw Baczko†
2011 Balzan Prize for Enlightenment Studies

Balzan GPC Adviser: Dominique Schnapper
Project Directors and Main Researchers: Bronislaw Baczko, Michel Porret, François Rosset (Project Directors); Mirjana Farkas (Coordinator); forty-five researchers and academicians around the world involved in writing entries for the dictionary
Affiliated Institution: Université de Genève
Period: 2012-2016

Bronislaw Baczko was Honorary Professor at the Université de Genève. The purpose of his research project was to fill the gap in current existing reference works on utopia with the publication of a collective reference work containing contributions from the most respected international scholars in the field.

Several fundamental features distinguish this endeavour. First, the tradition of utopia is not treated in its full temporal and historical scope. The Enlightenment is understood in a broad chronological sense, from the second half of the seventeenth to the early nineteenth century, and this Dictionnaire critique regards utopia as a model of thought and speech which underlay the profoundly reformist tendencies of the eighteenth century. From this perspective, the articles in the Dictionnaire critique do not deal with works or authors singularly. Rather, separate entries deal with the abstract concepts that define the horizon of utopia, and concern objects that exerted significant influence on the reformist thinking of the Enlightenment, building on the literary tradition, and on philosophical and political aspects of utopia. Approximately fifty entries have been put together, which should permit the fullest possible expression of this milieu.

The project directors’ intent was not to give a fixed definition of utopia which might serve as a common matrix for the articles. Rather than a model or a determined object, the concept of utopia around which the authors were invited to think can be regarded
as a set of discursive and narrative embodiments that provide a multifaceted body to this prospective and reformist thought process. Thus, the authors were free to define the approach they deemed most appropriate.

The development of the project involved graduate students from the École doctorale interdisciplinaire dix-huitiémit de the Université de Genève, Université de Lausanne, Université de Neuchâtel, Université de Fribourg, Universität Bern. Workshops were organized with the authors of the relevant articles.

The work of managing the project, drafting the articles, the overall elaboration of the index and bibliography, as well as the illustrations, was entrusted to a coordinator appointed for a period of two years. The contents consist of the following entries: Amérique; Amour; Anciens et modernes; Animal; Anti-utopie; Architecture; Arts; Bible; Corps humain; Communication; Crime et châtiments; Démographie; Droits de l'homme; Economie; Esclavage; État; Famille et education; Femme; Géographie; Guerre et Paix; Homme de lettres; Illustrations; Jardins; Langue; Législation; Livres et bibliothèques; Loi; Luxe; Mal; Mathématiques et géométrie; Missions jésuites; Mœurs; Mort; Nature; Paradis; Paraguay; Pauvreté; Paysage; Pirates, Piraterie; Polices; Propriété; Religions; Réseaux; Révolution; Révolution française; Santé; Sauvage; Savant; Sciences et Techniques; Sexualité; Sujet – Citoyen; Temps; Ville; Voyage.

The following authors contributed to the dictionary: Jean-Christophe Abramovici (Université de Paris-Sorbonne); Bronislaw Baczkó † (Université de Genève); Pierre-Yves Beaurepaire (Université de Nice); Ugo Bellagamba (Université de Nice); Marc-André Bernier (Université du Québec à Trois Rivières); Marie-Francoise Bosquet (Université de La Réunion); Fabrice Brandli (Université de Genève); Joël Castonguay-Bélanger (University of British Columbia); Marco Cicchini (Université de Genève); Yves Citton (Université Stendhal-Grenoble 3); Deborah Cohen (Université d’Aix-Marseille); Jean Ehrard (Université de Clermont-Ferrand); Jérôme Ferrand (Université de Grenoble); Vincenzo Ferrone (Università di Torino); Laurence Fontaine (CRH-CNRS/EHESS); Vita Fortunati (Università di Bologna); Jean-Marie Goulemot (Université de Tours); Audrey Higelein-Fusté (Université de Grenoble); Girolamo Imbruglia (Università di Napoli); Claire Jaquier (Université de Neuchâtel); Catherine Larrère (Université de Paris I, Panthéon-Sorbonne); Antoine Lilti (École nationale supérieure, Paris); Stéphanie Lojkine (Université d’Aix-Marseille); Robin Majeur (Université de Genève); Jean-Clément Martin (Université de Paris I, Panthéon-Sorbonne); Didier Masseau (Université de Tours); Helder Mendes Baiao
The dictionary was published by Georg of Geneva in 2016.

Publications

Figures in a Landscape: Topography and Hagiography in the World of Syriac Christianity

Peter R. L. Brown

2011 Balzan Prize for Ancient History
(The Graeco-Roman World)

Balzan GPC Adviser: Paolo Matthiae
Project Directors and Researchers: David Michelson, Jeanne-Nicole Mellon Saint-Laurent (heads of research team); Adam Kane (undergraduate research assistant); Justin Arnwine, Aram Bar Schabo, Anthony Davis, Nathan Gibson, Daniel Greeson, Tucker Hannah, Erin Johnson (graduate research assistants); Thomas Carlson (postdoctoral research assistant); Thomas Elliott, Winona Salesky, George Kiraz, James Bennett (technical development staff)
Affiliated Institution: Princeton University
Period: 2012-2017
Website: www.syriaca.org

Peter R. L. Brown is Philip and Beulah Rollins Professor of History at Princeton University. His Figures in a Landscape project is engaged in new research on texts written in Syriac, a dialect of Aramaic. In the past two decades, scholarly interest in Syriac has increased dramatically as scholars have realized that these sources offer different perspectives from better known historical sources in Greek, Latin or Arabic. In spite of this high level of interest, scholarly use of Syriac texts has been limited due to the lack of appropriate tools, such as an index of notable persons or a reference work for the geography of the Near East in Late Antiquity. Figures in a Landscape has begun to address this problem by collecting and identifying the locations of Syriac monasteries and Syriac centres of culture alongside the names of the figures associated with these places. The aim is to establish the topography of the activities of holy men of the varied Syriac traditions, across an area which once extended from modern eastern Turkey, through Syria and northern Iraq to the borders of Iran. Figures in a Landscape will also bring this vivid world to the attention of scholars and educated readers through a reference guide to these lives, with texts in both Syriac and in Christian Arabic,
which are awaiting discovery. Since 2012, the team has collected, collated, or revised information concerning: over 2,400 places (including over 5,000 variant toponyms in Syriac, Arabic, and English); over 700 saints (including over 2,000 variant names in Syriac, English and French); over 1,800 Syriac texts containing lives of saints; over 100 Syriac manuscripts from the British Library.

Work on the project is occurring in four areas: publication of geographic data, publication of hagiographic data, data preservation, and development of technical tools.

David Michelson headed the geographic data team comprised of Thomas Carlson, Winona Salesky, Thomas Elliott and Anthony Davis. This part of the project is complete and has been published as The Syriac Gazetteer, an open access online resource available at http://syriaca.org/geo/.

Jeanne-Nicole Mellon Saint-Laurent is leading the team involved in the publication of hagiographic data, which consists of David Michelson, Adam Kane, Aram Bar Schabo, Nathan Gibson, and advising from Dr. Daniel Schwartz of Texas A&M University and Dr. Ugo Zanetti. This part of the project, Qadishe: A Digital Catalogue of Saints in the Syriac Tradition and Bibliotheca Hagiographica Syriaca Electronica, is available at http://syriaca.org/q/index.html and http://syriaca.org/bhse/index.html, respectively.

As for data preservation, the team consists of David Michelson (head), Thomas Elliott and Winona Salesky. Michelson has directed the development of electronic tools for preserving and disseminating the data through the Syriac Reference Portal. Salesky has built the eXist XML database for The Syriac Gazetteer, and the same database is used to publish the Hagiography Database as well.

George Kiraz heads the team concerned with technical tools, which also had James Bennett and David Michelson as members. David Michelson is collaborating with the Beth Mardutho Research Library to develop digital tools of immediate use to the Figures in a Landscape project. The most important of these tools is The SEDRA Parser for Text Analysis, a Syriac digital lexicon and grammatical analysis tool. It is available online in a draft form at: https://sedra.tara-lu.com/. Team members have made twenty-five public presentations about Peter Brown’s Figures in a Landscape project. These presentations included demonstrations of the dataset and the solicitation of editorial comment from scholars in the field. They are listed at http://syriaca.org/blog/.
Two important publications associated with this project, the *Bibliotheca Hagiographica Syriaca Electronica* and *Qadishe: A Guide to Syriac Saints*, were publicly released at the XII Symposium Syriacum held at the Pontificio Istituto Orientale in Rome (19-24 August 2016). Both reference works are major steps forward in the field as the *Bibliotheca Hagiographica Syriaca* is the first work of its kind, describing over 1,800 texts, and the *Guide to Syriac Saints* contains three times as many entries as former works on Syriac hagiography.

As the project nears its conclusion, the project team is in the process of determining the most cost-efficient ways to enhance its digital publications to ensure their long term utility to Syriac studies, especially in light of the catastrophic destruction of Syriac culture which is currently occurring as a result of the violent conflicts in Syria and Iraq. Among its remaining objectives is firstly the publication of an online edition (free and open access) of the Gorgias Encyclopedic Dictionary of the Syriac Heritage, with over 600 entries on topics related to our existing reference databases. The publisher of the print edition (2011) has granted free reuse of the text so that it will be fully integrated with the project’s previous publications, thus enhancing its overall usefulness to scholars. Dr. Ute Possekel, a lecturer in Syriac at Harvard University, has agreed to act as a researcher to assist with this publication.

Secondly, work on the online Syriac grammatical parser will be continued, so that Syriac texts can be uploaded to the project’s partner site and returned in a fully lemmatized text with parsing information and definitions. This will greatly enhance the ability of non-Syriac scholars to use Syriac texts in research, and will be fully integrated into existing publications.

Finally, an agreement has been reached with two partner projects, Qatar University and Hebrew University of Jerusalem, to contribute data to this research.

**Publications**


The Role of Independent Theatre in Contemporary European Theatre: Structural and Aesthetic Changes

Manfred Brauneck

2010 Balzan Prize for the History of the Theatre in All Its Aspects

Balzan GPC Adviser: Gottfried Scholz
Researchers: Andrea Hensel, Tine Koch, Petra Sabisch, Azadeh Sharifi
Affiliated Institution: German Centre of the International Theatre Institute (ITI), Berlin
Period: 2011-2016
Website: https://www.iti-germany.de/publikationen/publikationen/

Manfred Brauneck is Former Professor of Theatre Studies at the Universität Hamburg and Director of the Zentrum für Theaterforschung in Hamburg. He designated half of his Balzan Prize to a research project which investigated the interaction between changes within social and legal conditions for performing artists, changing methods of production and distribution of theatre art and the shifting dialectics of content versus form in European contemporary theatre. The role of independent theatres in the holistic systems of theatre culture was the centre of focus.

The proposed research entailed producing four thematic studies consistently oriented towards fostering a new generation of researchers. The first colloquium took place on 20 October 2011 in the ITI offices in Berlin’s Kunstquartier Bethanien. Its aims were to reach a fundamental understanding of the project, to discuss the first steps to take, and to work out how to approach the thematic studies. Another of the study’s aims was to investigate the phenomenon of “independent theatre” within the European context – even though it is conceptualized very differently in different countries – and to examine social changes with regard to the effect they have had on independent theatre while also examining how this independent scene has reacted to those changes.
The second colloquium took place in the Kulturfabrik Kampnagel in Hamburg on 27 and 28 January 2012. The host, director Amelie Deuflhard, provided an extensive report on her work in Kampnagel and as head of the production house Sophiensaele in Berlin. She focused particularly on structural changes and changes to modes of production in the independent scene, delineated financial and funding models, and described the professionalization of independent performing artists that has now been achieved. Equally useful in guiding the research was a discussion with the Viennese performance collective God’s Entertainment, who provided an insight into their working practices as an independent artists’ collective within the Austrian cultural scene. The young researchers presented their work up to that point, and there was a discussion of the steps to be taken in the coming months. It was also decided to include the main aspects of the individual country reports within the framework of the thematic studies.

The third colloquium took place at the invitation of the Stiftung Universität Hildesheim from 11 to 13 May 2012 in Hildesheim. The main topic of discussion was how to place the independent scene’s developments, production forms and aesthetic concepts within the general context of the German theatre landscape. Prof. Dr. Wolfgang Schneider and the dramaturge Henning Fülle provided a complementary report on the position of independent theatre within the debate on cultural politics in Germany. Prof. Schneider gave an analysis of cultural politics in Germany with regard to the subsidised theatre system and the policy of supporting independent theatre. As part of the analysis, he outlined the criteria for this support, which he primarily saw as multidisciplinarity, interculturalism and internationalism. Henning Fülle reported from the studies forming his doctoral project at the Stiftung Universität Hildesheim, concentrating on the emergence of independent theatre in Germany and its evolution since the 1960s. Fülle discussed the discourse of recognition of the independent scene in politics, the media and the theatre industry.

Under the title “Art and Life. Transformations in (Eastern) Europe’s Independent Theatre Scene”, a fourth colloquium was held on 8 November 2012 at the University of Leipzig in the framework of the Euro-scene festival in Leipzig. The discussions and panels primarily addressed the international perspective. This entailed considering the structures and working practices of free and independent theatre in other European countries.

The conference “Post-migrant Perspectives on European Theatre” was held from 20 to 22 March 2013 at the Goethe Institute in London. It analyzed these developments
together with representatives from the arts, academia and the cultural policy. Based on the regional theatre scenes in Germany, the Netherlands, Sweden and the UK, the conference mainly focused on questions of representation, networking and the institutionalization of post-migrant theatre in Europe.

At Kampnagel in Hamburg, the fifth colloquium took place on 10 and 11 April 2013. It was dedicated to the topic of independent music theatre. Prof. Dr. Matthias Rebstock was invited as expert to give an overview on the varieties and developments of independent music theatre in Europe.

The fourth year of the research project, *The Role of the Independent Theatre in Contemporary European Theatre: Structural and Aesthetic Changes*, was dedicated to the completion of the thematic studies. The four studies and additional essays on experimental music theatre and different cultural policies for independent theatre scenes in a range of European countries were published in German and English by transcript Verlag in November 2016. The English version was chosen by the Library Selection Committee to be accessed free of cost at “Knowledge Unlatched”, as one of 150 publications worldwide in 2017.

All studies were presented to the public during a symposium at the University of Hildesheim in December 2016. The symposium was set up in close collaboration with Prof. Dr. Geesche Wartemann and Prof. Dr. Matthias Rebstock (both from the Institute for Media, Theatre and Popular Culture, University of Hildesheim) and Prof. Dr. Wolfgang Schneider (Institute for Cultural Policy, University of Hildesheim).

As follow up to the essay “Varieties of independent Music Theatre in Europe” by Prof. Dr. Matthias Rebstock, four studies about the independent music theatre scene in Switzerland, the Netherlands, Berlin and London will be carried out in 2018.

**Publications**

A Comparative Approach to Religions.  
A Historical Perspective  
from the Sixteenth to the Eighteenth Centuries

Carlo Ginzburg

2010 Balzan Prize for European History (1400-1700)

Balzan GPC Advisers: Quentin Skinner, Salvatore Veca
Researchers: Angela Ballone, Lucio Biasiori, Giovanni Tarantino
Affiliated Institution: Scuola Normale Superiore, Pisa
Period: 2011-

Carlo Ginzburg is Former Professor at the Scuola Normale Superiore di Pisa and Franklin D. Murphy Professor of Italian Renaissance Studies at the University of California, Los Angeles.

Ginzburg dedicated the second half of his Balzan Prize to a research programme in which he intends to scrutinize the emergence of a comparative approach to religions. Two young scholars, Biasiori and Tarantino, were initially involved in a research project going back to the 1500s, exploring the emergence of a comparative approach to religions, and focusing on the connection between antiquarianism and early ethnology, in the framework of European colonial expansion. A series of analytical studies emanating from this research were planned. Ballone joined the project at a later stage.

Three one-year researcher’s positions at the Scuola Normale Superiore di Pisa were awarded between 2011 and 2014. An international workshop, Comparing Religions. A Historical Approach (Sixteenth – Eighteenth Centuries), was also organized by Ginzburg at the Scuola Normale Superiore in Pisa from 10 to 11 June 2013. A workshop entitled Norms and Exceptions. A Comparative Approach to Casuistry was held in Florence from 11 to 13 December 2014, and the volume Norms and Exceptions, based on the Balzan project’s work on comparative casuistry, was submitted to the Bloomsbury Press. It is currently undergoing peer review for forthcoming publication. One additional conference on religious dissent before Luther, Prima di Lutero: Il dissenso religioso nel Quattrocento italiano, was held at the Scuola Normale Superiore in Pisa on 8 November 2016.

Publications

The Balzan Interdisciplinary Seminar: 
Literature as an Object of Knowledge

Terence Cave
2009 Balzan Prize for Literature since 1500

Balzan GPC Adviser: Karlheinz Stierle
Project Directors and Researchers: Wes Williams, Raphael Lyne (Deputy Directors); Karin Kukkonen, Olivia Smith (Balzan Research Fellows); Kathryn Banks, Timothy Chesters, James Helgeson, Raphael Lyne, Ita Mac Carthy (Balzan Research Lecturers); Miranda Anderson, Jennifer Gosetti-Ferencei, Patricia Kolaiti, Sabine Müller, Kirsti Sellevold, Emily Troscianko (Associate Researchers)
Affiliated Institution: St. John’s College, Oxford
Period: 2010-2013
Website: https://www.sjc.ox.ac.uk/discover/research/previous-research-centre-projects/

Terence Cave is Emeritus Professor of French Literature at the University of Oxford, Emeritus Research Fellow of St. John’s College Oxford and Fellow of the British Academy. Cave used the second half of his Balzan Prize to explore the value of literature as an object of knowledge, and more specifically, the cognitive value of literature in relation to other kinds of discourse. The research project was based at the Research Centre of St. John’s College, Oxford. The word “seminar” in the title was chosen to indicate the heuristic nature of the project: the core of the work lay in discussions designed to foster a sharper awareness of the issues that are at stake and to explore new directions in the understanding of literature.

The collective work of the project was carried out for the most part in workshops and discussion groups in which interdisciplinary issues were explored and debated with the cooperation of colleagues from non-literary disciplines. The twin themes of knowledge and cognition provided a focus for the discussions. The integrity of individual research programmes was respected, but they were also used as test-cases or illustrations of the broader interdisciplinary issues raised by the project.
Two Balzan Postdoctoral Research Fellowships were established at the outset of the project, tenable for three years. The Research Fellows were expected to produce published work of the equivalent of a book-length study over the course of their Fellowship. They also assisted in the arrangement of discussion groups, workshops and other collective events. They were not permitted to take on duties external to the project (for example teaching duties) except with the agreement of the Director. The Research Fellowships were attached to the St. John’s College Research Centre in Oxford, where the Fellows had offices.

Five Balzan Research Lectureships, each lasting up to one semester on a “buy-out” basis, were conferred on younger colleagues holding permanent academic positions at five different UK universities. The positions carried with them the obligation to produce at least one article-length publication during the period of leave, and (under the guidance of the Director) to arrange a two-day workshop at the end of the period of leave structured around the Lecturer’s work. The Research Lecturers were expected to participate as far as their other duties permitted in the other collective activities of the project. The workshops were held in the lecturer’s home institution; this arrangement helped to guarantee the wider diffusion of the project’s aims and intellectual outcomes.

The project also recruited a number of Associate Researchers. This group consisted of individual researchers from various academic contexts whose work was closely related to the aims of the project. They had no specific duties, but were expected to attend workshops and discussion groups in their areas of interest.

Ten fully-funded and several partly-funded workshops, together with a number of other project group meetings, were held. These typically featured short papers and intensive round-table discussion, and numbers were limited to around twenty-five in order to achieve focus and continuity. In addition, a regular discussion group consisting of core project members and other invited participants from the University of Oxford (academic post-holders, postdoctoral researchers, and a small number of doctoral students) was established in Oxford for the duration of the project, with the aim of discussing specific topics and problems arising from the project’s aim to develop a cognitive methodology for the study of literature. From time to time, visiting speakers with relevant interests were invited to give presentations to the group.

A programme of individual visits and exchange visits enabled core project participants to establish appropriate contacts in other universities, with the possibility
of reciprocation. In addition, the Director gave (and continues to give) public lectures both in the UK and abroad, and actively seeks to create an interdisciplinary network that will not only support and enhance the work of the project but also ensure that its intellectual energies are propagated beyond the lifetime of the project itself.

The first phase of the project ended on 30 September 2013, with a Methodological Colloquium entitled “Thinking with Literature” from 9-12 September 2013 at the University of Oslo, Centre for the Study of Mind in Nature, and ILOS (organised by Kirsti Sellevold, Terence Cave, Karin Kukkonen and Olivia Smith). As a direct continuation of the project’s activities, a number of further workshops and similar events, organized by former project participants, have been held subsequently with additional funding obtained from St. John’s College, Oxford and other institutions.

Publications


Smith, Olivia. *Inside the Furnished Mind: A Literary Reading of Locke’s Essay*. In progress.
Cosmology and Physics, Memory and Emotions: Research on the History of Science

Paolo Rossi Monti†
2009 Balzan Prize for History of Science

Balzan GPC Adviser: M.E.H. Nicolette Mout
Project Directors and Researchers: Michele Ciliberto, Bernardino Fantini (Supervisors); Matteo Borri, Olivia Catanorchi, Francesca Dell’Omodarme, Natacha Fabbri, Marco Matteoli, Yamina Oudai Celso, Chiara Petrolini (Research Fellows)
Affiliated Institution: Istituto Nazionale di Studi sul Rinascimento, Florence
Period: 2009-2013

Paolo Rossi Monti was Emeritus Professor at the University of Florence and Fellow of the Accademia dei Lincei. He set aside half of the Balzan Prize for research that involved seven outstanding young scholars. Paolo Rossi Monti personally followed their research in detail, with support from Michele Ciliberto, corresponding member of the Accademia Nazionale dei Lincei and regular Professor of Modern Philosophy at the Scuola Normale Superiore di Pisa, to supervise the research on cosmology and physics, while Bernardino Fantini, Director of the Institut d’Histoire de la Médecine et de la Santé at the Université de Genève, followed the research on the subject of memory and emotions.

The subject Cosmology and Physics in the Sixteenth and Seventeenth Centuries was investigated in detail with five pre-established themes. For the first, Cosmology and Medicine in the High and Late Renaissance, Olivia Catanorchi studied the interrelations between astronomy, cosmology and medicine, and dedicated special attention to the work of Cornelio Gemma, who was known by Campanella and Kepler. Aspects of Aristotelian Physics in the Paduan Lessons of Pietro Pomponazzi, the second theme, was investigated by Francesca Dell’Omodarme, who studied Pomponazzi’s comments and observations on the argumentation on Physics and Cosmology in Aristotle’s works. The third theme, On the Mathematical Foundation of Giordano Bruno’s Natural Atomism, was taken up by Marco Matteoli, who translated the Articuli centum et sexaginta adversus mathematicos et philosophos for the first time
into Italian (including an extensive introduction and analytical commentary), starting with his in-depth study on Bruno’s writings dedicated to mathematics and geometry. For the fourth theme, Science, Philosophy and Politics in the Venice of Paolo Sarpi, Chiara Petrolini studied the intense intellectual exchange between Venice and England at the beginning of the seventeenth century, and in particular, the physiognomy of the so-called Sarpi circle. This theme of research is related to the cultural background of *De la Pirotechnia* by Vannuccio Biringuccio. Finally, in The Moon in *Fabula, Istoria* and Utopia, Natacha Fabbri identified the main pre-Galileo sources defining the Moon as another Earth (Proclus, Macrobius, Simplicius, Plutarch), and delineated the ways it was articulated by Bruno, Patrizi, Kepler and Wilkins.

Concerning the subject *Memory and Emotions*, two research projects dealt with pre-established themes. In Arts of Memory in the Age of the Neurosciences, Matteo Borri followed an investigation on the historical developments of experimental research and on the theoretical contributions to the theme of memory and neurobiology, as well as techniques for increasing mnemonic power and maintaining mnemonic functions in the presence of pathologies, thus highlighting the connections between these techniques and the *artes reminiscendi* that enjoyed widespread popularity in Europe between the fifteenth and eighteenth centuries. In the second project, Psychiatry, Anthropology, and Scientific Psychology from Descartes to the French Enlightenment: Textual Heritage and Theoretical Influx on Freud’s Theory of Emotions, Yamina Oudai Celso investigated the background to Freud’s Theory of Emotions.

**Publications**

The following articles can be added to the extensive bibliography in the previous editions of the *Overview*, which can be consulted at: http://www.balzan.org/en/prizewinners/paolo-rossi-monti/research-project-monti.


punto and termine, and also scheduled the works: Ars deformationum, De mordentii circino, De somnii interpretatione, De triplici minimo et mensura, Idiota triumphans, Mordentius and Praelectiones geometricae.


Petrolini, C. “L’offensiva dell’Inquisizione romana contro fra Fulgenzio Micanzio (1609 e 1624) sulla base di alcuni documenti conservati all’Archivio per la Congregazione della Fede.” Studi storici dell’Ordine dei Servi di Maria (2016): 547-594.


Three Research Projects on the Visual Arts in Italy

Maurizio Calvesi

2008 Balzan Prize for the Visual Arts since 1700

Balzan GPC Adviser: Dmitry O. Shvidkovsky
Project Directors and Researchers: Maurizio Calvesi, Stefania Macioce, Alessandro Zuccari, Caterina Volpi (Supervisors); Stefano Colonna Filippone de Montagu, Jacopo Curzietti, Alberto Dambruoso, Camilla Fiore, Michele Nicolaci (Researchers)
Affiliated Institution: Fondazione Palazzo Albizzini, Collezione Burri, Città di Castello (Perugia)
Period: 2009-2016

Maurizio Calvesi is Professor Emeritus at the Università di Roma “La Sapienza”, Fellow of the Accademia Nazionale dei Lincei in Rome and Fellow of the Accademia Clementina in Bologna. Calvesi set aside the second half of the 2008 Balzan Prize for the Visual Arts since 1700 for three research projects, which he personally supervised. The first (Project A), *Antiquarian Culture in Rome from Biondo Flavio to Piranesi*, dealt with the works of fifteenth century “antiquarians”, including the problem of *Polifilo*, and ranging from Cartari, Pignoria and Cassiano, through Pozzo to Kircher, Venuti and Piranesi.

The research was carried out by three scholars: Stefano Colonna (in charge of the research), Camilla Fiore and Jacopo Curzietti. It was supervised by Professor Maurizio Calvesi, author of various studies on these subjects. Professor Colonna’s close textual analysis of the single surviving example of Stefano Buzzoni’s *Epigrammata* permitted the research to incorporate a triangularization of cultural relations between Rome, Venice and Brescia. In addition, Professor Colonna identified the resting place of Tommaso Paleologo (previously described as unknown) in the Basilica of St. John Lateran in Rome. Drs. Curzietti and Fiore carried out detailed research on the period covering the pontificates of the Barberini and Chigi Popes (1630-1666). In minutely examining the literature of the period and concentrating on the architectural and figurative aspects of artistic expression, much light has been shed on the projection of the image of a *Roma-Triumphans*
during this period. In addition, many new aspects regarding the restoration projects of classical Roman edifices and structures undertaken at the time have been brought to light.

In the second project (Project B), *A Critical Edition of the Sources and Documents Related to Caravagggesque Painters and a Search for yet Undiscovered Sources*, Professor Stefania Macioce, who had already published a fundamental collection of documents concerning Caravaggio (Rome 2003), supervised this research together with Professor Maurizio Calvesi, Professor Alessandro Zuccari and Professor Caterina Volpi. The Balzan Project’s aim was to create an analogous corpus for the main Caravagggesque painters concentrating on the great number of scattered, already known documents. The research was carried out by Michele Nicolaci, and also contemplated the possible discovery of new documents on Caravaggio.

*A Complete Catalogue of the Works of Umberto Boccioni* is the objective of Calvesi’s third research project (Project C). The 1982 catalogue of Boccioni’s works needs revision in consideration of the documentary innovations that have emerged on the painter since then, and the great number of unpublished works discovered. This new catalogue, edited by Alberto Dambruoso with the assistance of Professor Maurizio Calvesi, was published in 2016.

**Publications**

Only updates on the publications lists in previous editions of the *Overview* are listed below. For more details, consult the Balzan website at: http://www.balzan.org/en/prizewinners/maurizio-calvesi/research-project-calvesi.

**Project A**

The final conclusions of the research were or will be published in the following publications:

Fiore, Camilla S. *Un carteggio inedito: incisioni e documenti sulle antichità etrusche di Athanasius Kircher e Ovidio Montalbani*. Forthcoming.

Project B

Nicolaci, Michele. Paolo Guidotti il Cavalier Borghese (1560-1629). Forthcoming.

Project C

Thomas Nagel is Professor of Philosophy and Law at New York University. The main aim of his research project was to explore the complexity of ethics and politics, while also supporting young researchers in the fields of philosophy of mind, philosophy of language, and philosophy of science. Most of the funds were used to provide fellowships to enable visiting graduate students from abroad to spend time at New York University, to participate in the Philosophy Department’s program and its Institute of Philosophy research activities as well as in the NYU Law School “Colloquium in Legal, Political and Social Philosophy”, conducted by Thomas Nagel and Ronald Dworkin. The Colloquium examined scholarly work in progress on the issues of global justice, international human rights, immigration and national boundaries, and the relation between democratic legitimacy and judicial versus legislative supremacy. Students, younger scholars, and senior faculty members all participated in this program of ongoing discussions. For the four year duration of the project, several Balzan Fellowships were allocated annually to students coming to the Philosophy Department to spend a year as visiting graduate students. Every effort was made to identify scholars with the appropriate interests and abilities, so that such visits might provide them with an opportunity to greatly expand their intellectual horizons.
Each of the Balzan Fellows took two graduate seminars per semester for credit in the department, and also participated in the various colloquia and conferences sponsored by the Institute of Philosophy, the Philosophy Department, and the School of Law.

A further portion of the funds supported activities of the Institute of Philosophy, fostering research groups on topics of public concern that have an important philosophical dimension, such as “Science and Religion” or “Epistemology and Ethics of Disagreement”. During the spring term of 2010 the funds supported a research seminar, “Evolution and Ethics”, conducted by two assistant professors in the NYU Philosophy Department, Sharon Street and Laura Franklin-Hall. The seminar examined recent philosophical work concerning the relevance of evolutionary biology to ethics.

Funds were also used to support three NYU/Columbia Graduate Student Philosophy Conferences from 2011 to 2013. Finally, in the spring of 2013, Balzan funds were used to support a series of conferences on the foundations of epistemology, conducted by the New York Institute of Philosophy. The conferences brought together junior and senior scholars for intensive discussion of specific materials, presented by their authors.
Oppenheim’s International Law.  
A New Volume on the Law of the United Nations

Rosalyn Higgins

2007 Balzan Prize for International Law since 1945

Balzan GPC Adviser: Luzius Wildhaber
Project Directors and Researchers: Philippa Webb (Project Manager), Dapo Akande, Sandesh Sivakumaran, James G. Sloan, Ralph Wilde
Affiliated Institution: The British Academy
Period: 2007-2016

Dame Rosalyn Higgins, DBE, QC, is a former President of the International Court of Justice in The Hague, Fellow of the British Academy and Fellow of the American Academy of Arts and Sciences. Her Balzan research project focused on a comprehensive study of all legal issues relating to the United Nations. No such work had existed until this project was concluded with the final publication of a new Oppenheim’s International Law on the law of the United Nations, an authoritative and comprehensive study of the United Nations’ legal practice that will be of great assistance to missions to the United Nations, governments and academics. Directed by Dame Rosalyn, a group of young scholars (Dapo Akande, Sandesh Sivakumaran, James G. Sloan, Philippa Webb, and Ralph Wilde) carried out the research work necessary to the realization of the Oppenheim. The researchers are all academics teaching full-time in British universities.

The Balzan Oppenheim Project team had its first meeting in The Hague, The Netherlands, when it made extensive revisions to the original Outline of Contents for Oppenheim on International Organizations. A broad assignment of topic areas was made, and methodological issues and the approach to drafting in the ‘Oppenheim style’ were discussed. A second team meeting took place in November 2008 in The Hague, during which preliminary research results on peacekeeping and human rights bodies were discussed. The meeting also considered outlines for research on UN immunities and the legal personality of the UN at the domestic and international levels.
A third team meeting was held in November 2009 in The Hague (when Rosalyn Higgins had retired from the International Court of Justice). First drafts on the principal UN organs, the subsidiary organs, human rights, international criminal tribunals, financing and the role of the UN Secretariat were reviewed. The team had a fourth meeting in London in March 2010. At this meeting the first drafts on UN immunities and legal personality were discussed in detail. A fifth meeting was held in December 2010 in The Hague to consider first drafts on a range of topics and to review second drafts on peacekeeping, human rights, tribunals, principal and subsidiary UN organs, financing, the UN Secretariat, immunities and legal personality. A sixth meeting was convened in London in May 2011 to discuss a first draft on powers and a revised draft on the principal organs. The seventh meeting took place in London in March 2012 to examine first drafts on voting, the UNHCR, and disaster relief as well as to consider revised drafts on tribunals, subsidiary organs, financing, the UN Secretariat, peaceful settlement of disputes, the International Criminal Court, powers, and personality.

The eighth meeting was held in November 2013 in London to examine first drafts on the International Court of Justice (in part), Responsibility, Membership (in part), and Geneva-Vienna-New York relations. Substantive revisions were made to existing drafts on the UN High Commissioner for Refugees, Disaster Relief, Voting, Immunities, Hybrid Tribunals, Peacekeeping, Principal Organs, Subsidiary Bodies, the Security Council, Legal Personality, Powers, International Criminal Court, and the Peaceful Settlement of Disputes. The ninth meeting was held in February 2015 in London. The team considered new drafts on the International Court of Justice (various aspects), Membership, Promoting International Law, the International Tribunal for the Law of the Sea, the UN Compensation Commission, and Sanctions. The tenth meeting was held in November 2015 in London. The team examined drafts on: the International Court of Justice (various aspects), Membership, the Trusteeship Council, Specialised Agencies, Electoral Assistance, and Democratic Governance. The final topics for drafting were allocated to team members.

As for the project itself, the research resulted in a 1,500-page book, and generated some important, related publications for the young academics who took part. The main goal of the project, Oppenheim on the Law of the United Nations, is a 1,500-page work published in two volumes. An authoritative, comprehensive study, it is directed to the legal realities of the United Nations, not just the text of its charter. It is entirely new, but prepared in the way that has become so familiar over succeeding editions of the fundamental treaties on International law by L.F.L. Oppenheim. After its appearance in
the fall of 2017, the book was launched at the United Nations Bookshop in New York, the Foreign Office in London, and the International Court of Justice in the Hague. In May 2018, two round-table discussions on the work were held at ISPI (Istituto per gli Studi di Politica Internazionale) in Milan and at USI (Università della Svizzera Italiana) in Lugano. Dame Rosalyn Higgins and researchers Philippa Webb, Dapo Akande and Sandesh Sivakumaran participated.

Publications

Three Objectives in the Studies of Medieval Literary Texts

Michel Zink

2007 Balzan Prize for European Literature (1000-1500)

Balzan GPC Adviser: Karlheinz Stierle
Researchers: Chiara Concina, Hedzer Uulders, Daniele Ruini (Fellowships); Ursula Bähler, Alain Corbellari, Patrizia Gasparini, Lino Leonardi, Charles Ridoux (Research Group)
Affiliated Institution: Institut de France
Period: 2008-2016

Michel Zink was Professor of Literatures of Medieval France at the Collège de France when he received the Balzan Prize. Professor Zink used the second half to achieve three objectives: conferences on the circulation and translation of medieval literary texts; fellowships for young researchers in Romance Philology; and support for publications.

The first conference on the circulation and translation of medieval literary texts was entitled Lire un texte vieilli, du Moyen Âge à nos jours and took place from 1 to 3 April 2009 at the Collège de France. A preparatory session in regard to the second conference was organized with Anna Maria Babbi (Università di Verona) on the topic Écrire dans la langue de l’autre. This was held at the Palazzo Guerrieri Gonzaga, Villa Lagarina (TN), Italy, on 13 May 2010, when the paper Raimbaut de Vaqueiras. La poésie comme langue de l’autre was presented. The conference, entitled D’autres langues que la mienne, was held in the Great Hall Marguerite de Navarre of the Collège de France on 10 and 11 May 2012.

A fellowship program, Prix de recherche en philologie romane, made it possible for a young researcher to live and work in Paris for up to a year. In 2009, the first fellowship
was awarded to Chiara Concina. The second was awarded in 2011 to Hedzer Uulders who, under Professor Sylvie Lefèvre (Columbia University), helped put together an edition of *Saluts d’amour* (love poems in the form of letters), to be published in the *Lettres gothiques* collection. In 2013 the third fellowship was awarded to Daniele Ruini.

As regards publications, a research group working with the Prizewinner on the project *L’Europe des philologues* was concerned with the publication of the correspondence of the great Romanists of the nineteenth and twentieth centuries. The first part, *Gaston Paris – Joseph Bédier*, also supported by the Fonds national suisse de la recherche scientifique, appeared in 2009. The research funds from the Balzan Prize also made it possible for the collection *Lettres gothiques* (Le Livre de Poche, Hachette) to include important works from the beginning of the fourteenth century, and for the publisher Les Belles Lettres to publish and sell an entirely new and truly outstanding dictionary of Old and Middle French at an accessible price for students. The author is a Japanese scholar working under the Prizewinner’s supervision.

**Publications**

*Conferences on the circulation and translation of medieval literary texts*


*L’Europe des philologues*


*Lettres gothiques*


**Dictionary**


**Recent books by Michel Zink**


History of the Trio Sonata: 
Catalogue Raisonné of the Tradition

Ludwig Finscher

2006 Balzan Prize for the History of Western Music since 1600

Balzan GPC Adviser: Gottfried Scholz
Project Directors and Researchers: Prof. Dr. Laurenz Lütteken (Supervisor), Monika Baer, Sergio Ciomei, Gabriela Freiburghaus, Claire Genewein, Ivana Rentsch, Nicola Schneider, Cristina Urchueguía, Elisabeth Wanzenried
Affiliated Institution: Universität Zürich
Period: 2006-2016

Ludwig Finscher is Professor Emeritus at Ruprecht-Karls-Universität, Heidelberg. Finscher set aside half of the sum of the Balzan Prize for the publication of an extensively annotated catalogue on the tradition and transmission of the trio sonata from its first appearance around 1650 until around 1780, in order to establish the hitherto unwritten bases for the history of the genre as well as give a considerable stimulus to musical practice.

The project was established by Ludwig Finscher together with Laurenz Lütteken, who acted as project manager responsible for administration. The project was set up with two 50% positions designated for young scholars. The first position was intended for a researcher who had completed his/her doctoral studies and was working towards the Habilitation. These were held by Cristina Urchueguía and Nicola Schneider. The second position, for a doctoral candidate (PhD student), was first held by Elisabeth Wanzenried, who was replaced by Gabriela Freiburghaus. By May 2011, about 1,350 editions with three to twelve sonatas had emerged from more than 2,000 sources – many more than were expected. A distinction was thus drawn between printed editions and manuscripts, giving priority to the former. A specific data base was developed for organizing the materials, and made available to specialized music libraries, students and professors. In another initiative connected to the project, the Baroque violinist Professor Monika Baer and harpsichordist Sergio Ciomei worked with a specialized ensemble, and helped to bring some of this lost music to life.
The complete catalogue raisonné of the *sonata a tre* was published by Henle in Munich in 2016 under the title *Die Triosonate. Catalogue Raisonné der gedruckten Quellen*. The culmination of Finscher’s research project, it is the first complete inventory of one of the main forms of chamber music in the seventeenth and eighteenth centuries, bringing to light many lesser known, long neglected composers and their works.

**Publications**

In total over fifty publications have come out of the project, including the following of particular note:


Balzan-Skinner Lectures
and International Conferences

Quentin Skinner
2006 Balzan Prize for Political Thought; History and Theory

Balzan GPC Adviser: Salvatore Veca
Balzan-Skinner Scholars: Hannah Dawson, Joel Isaac, Timothy Stanton, Gabriel Paquette, Karuna Mantena, Anna Becker, Teresa Bejan.
Affiliated Institutions: European University Institute (EUI), Fiesole; Centre for Research in the Arts, Social Sciences and Humanities (CRASSH), University of Cambridge
Period: 2006-2016
Websites: http://apps.eui.eu/Personal/Projects/FreedomProject/Abouttheproject.shtml; http://www.crassh.cam.ac.uk/programmes/balzan-skinner-fellowship

Quentin Skinner is Barber Beaumont Professor of the Humanities at Queen Mary, University of London. The second half of his Balzan Prize was used for a lecture series, a two-volume publication and a cycle of international conferences.

The Balzan-Skinner Lectures, University of Cambridge
This series of annual lectures with accompanying one-day conferences on themes in modern intellectual history was delivered for seven years at the University of Cambridge under the joint auspices of the Faculty of History and the Centre for Research in the Arts, Social Sciences and Humanities (CRASSH). Each lecturer was made a Fellow at CRASSH during the academic term in which the lecture and accompanying conference took place, thereby providing the lecturer with a period of residence at Cambridge and the opportunity to make use of the full range of its
outstanding facilities for research. The regulations specified that the lectureship be restricted to younger researchers (lecturers could be no further advanced in their careers than 10 years since the completion of their PhD); that each lecture should be delivered on a topic in Modern Intellectual History (1500 to the present day); and that a one-day conference be associated with each lecture, to which other younger researchers in the relevant field were invited. The Appointments Committee ensured that the lectureship was equally open and hospitable to researchers working in all idioms and traditions of intellectual history.

The original intention of the Balzan Foundation was that this series should run for five years. Due, however, to the exceptional care with which the endowment was managed by the Faculty of History at the University of Cambridge, it proved possible to appoint seven lecturers, the last of whom delivered the final Balzan-Skinner Lecture in April 2016. The complete list of lectures is as follows:

Dr. Joel Isaac, Queen Mary, University of London, *Radical Translation: Analytic Philosophy in America*, May 2011.
Dr. Timothy Stanton, University of York, *John Locke and the Fable of Liberalism*, October 2012.
Dr. Karuna Mantena, Yale University, *Gandhi’s Realism: Means and Ends in Politics*, May 2014.

Dr. Bejan’s was the last lecture funded by the Balzan Foundation. However, the series was such a success that the University of Cambridge agreed to continue to fund an annual lecture and Fellowship along similar lines. The main change is that, whereas the funding provided by the Balzan Foundation enabled the University employing the Balzan-Skinner Fellow to be reimbursed for the Fellow’s release from teaching and other duties, this practice can no longer be sustained. However, there will still be an annual Fellowship and accompanying lecture, which in future will be called The Quentin Skinner Fellowship.
The Balzan Conferences, European University Institute

A series of four international conferences under the general title Freedom and the Construction of Europe took place (July 2008-September 2009) at the Conference Centre of the European University Institute (EUI) at San Domenico di Fiesole (Florence). An international advertisement resulted in over one hundred applications from young scholars wishing to join the core group; twenty-two names were finally selected. The titles of the conferences were as follows: Religious Freedom and Civil Liberty (3-5 July 2008), Liberty and Liberties in Legal and Constitutional Thought (24-28 September 2008), The Freedom of Individuals (1-5 July 2009) and European Freedom and its Boundaries (23-27 September 2009). The proceedings of the EUI conferences were published as a book in 2013. (For full details see below.)

Publications

New Patterns of Urban Activity

Peter Hall†

2005 Balzan Prize for the Social and Cultural History of Cities
since the Beginning of the Sixteenth Century

Balzan GPC Adviser: Keith Thomas
Researchers: Başak Demires Ozkul; Jonathan Reades; Francesca Recchia
Affiliated Institution: The Bartlett School of Planning, University College of London
Period: 2006-2009

Peter Hall was Professor of Planning and Regeneration at the Bartlett School of Planning, University College London, and Senior Research Fellow at the Young Foundation.

With the second part of his Balzan Prize, Sir Peter Hall financed and supervised three interconnected research projects at the Bartlett Centre for Advanced Spatial Analysis at the University College of London. The first, Labour Markets and Housing Markets in England, was proposed by Sir Peter Hall and carried out by Dr. Başak Demires Ozkul, who examined the simultaneous operation of labour markets and housing markets within England and Wales as part of her doctoral research. This research aimed at capturing the effects of the knowledge economy on the settlement structure of home and work by bringing together and expanding current spatial analysis techniques. This has unravelled some of the complex settlement patterns that have been observed between 1981 and 2001. These representations have also demonstrated their effectiveness in linking different strands of socio-economic theory through spatial analysis, providing a bridge between these fields.

The second project, Geographical and Temporal Patterns of Information Flows in European Cities, was carried out by Dr. Jonathan Reades, whose doctoral research made use of phone company calling data to analyse the geographical and temporal patterns of information flows in Britain, and led to a highly productive working relationship with MIT’s SENSEable City Laboratory, the world’s leading research group in the field of mapping and analysing urban activity patterns. Here he contrib-
uted to proposals that culminated in SENSEable’s installation at the MoMA in New York and in a disaster-planning research project with the Dutch telecommunications company Koninklijke KPN N.V.

Dr. Francesca Recchia worked on the third project, *European Identity and Recent Immigrants into European Cities*. Her focus, stemming from her postdoctoral work on European identity with Sir Peter Hall, analysed this through then recent European literature, concentrating on writers with multiple ethnic and cultural identities. About a tenth of the research sum was allocated to the Young Foundation (formerly the Institute of Community Studies) to finalize and pay for two studies in book form. *London Voices, London Lives* was published in 2007 by Policy Press. It consists of edited transcripts of more than one hundred interviews with Londoners in eight different sample areas in and around the city. *The Polycentric Metropolis: Learning from Mega-City Regions in Europe* was published in 2006 by Earthscan Publications. Fifty copies of this book were donated to the young researchers who participated in the POLYNET project, analyzing and describing flows of information and their geographical patterns in eight regions of Northwest Europe.

**Selected Publications**


The Heidelberg Colloquies on East Asian Art History and
Buddhist Stone Inscriptions in North China

Lothar Ledderose
2005 Balzan Prize for the History of the Art of Asia

Balzan GPC Adviser: Dmitry O. Shvidkovsky
Researchers: Paul Copp, Suey-Ling Tsai (Buddhist Stone Inscriptions)
Affiliated Institutions: Ruprecht-Karls-Universität Heidelberg (Heidelberg Colloquies); Heidelberger Akademie der Wissenschaften (Buddhist Stone Inscriptions)
Period: 2006-2011 (Heidelberg Colloquies); 2006-2015 (Buddhist Stone Inscriptions)

Lothar Ledderose is Senior Professor of the History of East Asian Art at Ruprecht-Karls-Universität, Heidelberg. He financed two projects with the second half of his Balzan Prize.

Heidelberg Colloquies
One third of the second part of Ledderose’s prize went towards the funding of colloquies held at the Institute of East Asian Art History at Heidelberg University (Institut für Kunstgeschichte Ostasiens an der Universität Heidelberg). About thirty researchers who were writing their theses in the field of East Asian Art gave papers. The purpose was to give them a forum where they could present their work in progress, to offer them an opportunity to learn about each other’s topics and methods, and to establish international standards in the field. Applications were solicited from Europe, America and East Asia. Based on written thesis proposals, the selection was made by a committee of three professors from more than one country. In addition, one senior specialist was invited to each colloquy to give a lecture. Selected theses have been published. One young researcher took charge of the preparatory work for the colloquies, which were entitled The Heidelberg Colloquies on East Asian
Art History. The Heidelberg International Colloquies were held between September 2006 and July 2011.

**Buddhist Stone Inscriptions**

Another research project was carried out in collaboration with the Heidelberg Academy of Sciences and Humanities (Heidelberger Akademie der Wissenschaften – HAW). This institution supports long term research on Buddhist inscriptions engraved in stone in China. The research project’s principal aim was to fully document these inscriptions. The Ledderose-Balzan research project explored methods of presenting the inscriptions to the scholarly community, and how to make them known and intelligible to a wider audience, which involved developing new methods of digitizing the inscriptions and presenting them visually. One result of this research project was the exhibition *Herz der Erleuchtung. Buddhistische Kunst in China 550-600 / The Heart of Enlightenment. Buddhist Art in China 550-600*, organized for the centenary of the Museum für Ostasiatische Kunst, Köln (Germany). Remaining funds were used to present research results digitally.

In 2014, *Buddhist Stone Sutras in China*, with Lothar Ledderose editing the first volume on the Sichuan Province, was awarded the Toshihide Numata Book Prize for the worldwide most outstanding book in the field of Buddhist studies. Balzan funds also enabled Professor Ledderose and his collaborators Dr. Claudia Wenzel, Martin Bemmann, MA, and Manuel Sassmann, MA, from Heidelberg to travel to the awards ceremony in October of 2015 at the University of Berkeley, where they gave a report on the team’s work, joined by colloquy participant Professor Dame Jessica Rawson of Oxford University. Balzan funds also made publication of researcher Paul Copp’s book on Buddhist incantations possible.

**Exhibition**


**Publications**


Women, Gender and the Family in the Muslim World

Nikki Ragozin Keddie

2004 Balzan Prize for the Islamic World from the End of the Nineteenth to the End of the Twentieth Century

Balzan GPC Adviser: Hélène Carrère d’Encausse
Researchers: Janet Afary, Masserat Amir-Ebrahimi, Houri Berberian, Arash Khazeni, Jasamin Rostam-Kolayi, Holly Shissler, Nayereh Tohidi
Affiliated Institution: University of California, Los Angeles (UCLA)
Period: 2005-2012
Weblinks: http://www.international.ucla.edu/africa/event/7370; http://www.international.ucla.edu/africa/event/7633; http://web.international.ucla.edu/institute/event/8618; http://www.international.ucla.edu/asia/centralasia/event/9573

Nikki Ragozin Keddie is Professor Emerita of History at the University of California, Los Angeles. Her research project initially involved her bringing six postdoctoral fellows in women’s studies to UCLA and working with them in the course of four years. The six Keddie-Balzan Fellows were chosen from authors of important research on women, gender and the family in the Muslim World. They were encouraged both to continue their ongoing research and to produce papers on the broader implications of their work for the study of the Islamic world and/or comparative history and society. The fellows for 2005-2006 were Holly Shissler, who taught two courses in history, and Nayereh Tohidi, who taught in women’s studies. The 2006-2007 fellows were Masserat Amir-Ebrahimi in geography and sociology, and Jasamin Rostam-Kolayi in history. The 2007-2008 fellow was Houri Berberian in history, and the 2008-2009 fellow was Janet Afary in history.

A final workshop, New Ideas for Middle Eastern Societies: Analyzing Women’s Writings, was held at the University of California, Los Angeles, in 2007. The papers presented by Balzan fellows Holly Shissler, Masserat Amir-Ebrahimi and Jasamin Rostam-Kolayi were published in a special issue of the Journal of Middle East Women’s Studies, edited and with an introduction by Nikki Keddie.
Professor Keddie was able to spend less than projected, and thus to continue the program beyond its original finish date. Two one-quarter fellowships were awarded, one to Pomona College Assistant Professor Arash Khazeni in history, autumn 2010, and a supplementary fellowship to Masserat Amir-Ebrahimi in gender-related studies in spring 2011. Remaining funds were also used to organize a seminar, Ethnic and Religious Minorities in Iran: Realities and Policy Issues, Past and Present, planned and presented by Nikki Keddie, Nayereh Tohidi, and Janet Afary at UCLA on 22 May 2009.

Publications

Selected publications are listed below. For a complete list, see http://www.balzan.org/en/prizewinners/nikki-ragozin-keddie/research-project-keddie.


Shissler, H. “Womanhood Is Not For Sale: Sabiha Zekeriya Sertel Against Prostitution and For Women’s Employment.” *Journal of Middle East Women’s Studies (JMEWS)* Vol. 4, n. 3 (Fall 2008).

Two Lines of Research in Prehistoric Archaeology

Colin Renfrew

2004 Balzan Prize for Prehistoric Archaeology

Balzan GPC Adviser: Paolo Matthiae

Researchers: Lambros Malafouris (Balzan Fellow); Michael Boyd, Giorgos Gavalas, Myrto Georgakopoulou, Thomas Loughlin, Evi Margaritis, Barry Molloy, Ioanna Moutafi, Dimitris Tambakopoulos (2006-2008 Excavation Participants)

Affiliated Institution: The McDonald Institute for Archaeological Research, University of Cambridge

Period: 2005-

Lord Renfrew of Kaimsthorn is a Senior Fellow at the McDonald Institute for Archaeological Research, University of Cambridge, and former Disney Professor of Archaeology and Director of the McDonald Institute for Archaeological Research.

The first line of research was devoted to the development of “Material Engagement Theory”, the study of past ways of thinking through the material culture that has survived, a research area which Colin Renfrew has been trying to develop since his 1982 Cambridge Inaugural Lecture, Towards an Archaeology of Mind. The second line of research involves the development and expansion of archaeological fieldwork in the Early Bronze Age cultures of the Cycladic Islands of Greece, the subject of Renfrew’s 1965 doctoral dissertation and subsequent work.

As for the first line of research, Lambros Malafouris held the position of Balzan Postdoctoral Research Fellow in Cognitive Archaeology at the McDonald Institute for Archaeological Research in Cambridge, organized one symposium together with Colin Renfrew (The Cognitive Life of Things. Recasting the Boundaries of the Mind, McDonald Institute, April 2006, with papers published as a McDonald Institute Monograph in 2010) and co-organized another with Colin Renfrew and Chris Frith of the Department of Cognitive Neuroscience, UCL (The Sapient Mind: Archaeology meets Neuroscience, McDonald Institute, September 2007) with papers published as a special theme issue by the Philosophical Transactions of the Royal Society in 2008,
and in 2009 by Oxford University Press under the title *The Sapient Mind: Archaeology Meets Neuroscience*. Lambros Malafouris and Colin Renfrew also organized a seminar on the links between archaeology and neuroscience (Steps to a Neuroarchaeology of Mind, Exeter, December 2006), with selected papers published in a special section of the *Cambridge Archaeological Journal*. Malafouris is now Johnson Research Fellow and Teaching Fellow in Creativity, Cognition and Material Culture at Keble College, Oxford. His major monograph *How Things Shape the Mind* was published by MIT Press in 2013, with a foreword by Colin Renfrew.

Archaeological fieldwork in the Early Bronze Age Cultures of the Cycladic Islands of Greece was the subject of the second line of research. A junior colleague of Colin Renfrew, Giorgos Gavalas, was involved in completing the publication of an earlier phase of the work on the site of Dhaskalio, on the island of Keros, which was then published in monograph form by the McDonald Institute of Archaeological Research. Thanks to the second half of the Balzan Prize to Colin Renfrew, it was possible to conduct the excavation of the site of Dhaskalio and Dhaskalio Kavos during the excavation seasons of 2006, 2007 and 2008. Preliminary reports on the 2006-2007 and 2008 excavations were published in *The Annual of the British School of Athens*. The excavations involved the participation of a number of the project's young graduate archaeologists, several of whom are contributors to the final report. Three volumes of the final report are now published, with Volume 3 still in final preparation.

**Publications**


[Including the following chapters by members of the research group: C. Knappett and L. Malafouris, Material and Non-Human Agency: An Introduction; L. Malafouris, At the Potter’s Wheel: An Argument for Material Agency]


[Including the following chapters by members of the research group: L. Malafouris, The Cognitive Life of Things: Archaeology, Material Engagement, and the Extended Mind; Ibid., Engaging the ‘Missing Mass’]


[Including the following chapters by members of the research group: C. Renfrew, C. Frith and L. Malafouris, Introduction; L. Malafouris, Between Brains, Bodies and Things: Tectonoetic Awareness and the Extended Self]

[Including the following chapter by members of the research group: L. Malafouris, Grasping the Concept of Number: How Did the Sapient Mind Move Beyond Approximation?]


[Including the following chapter: L. Malafouris, Before and Beyond Representation: Towards an Enactive Conception of the Palaeolithic Image]


Reconstruction of the Immediate Aftermath of War: A Comparative Study of Europe, 1945-50

Eric Hobsbawm†
2003 Balzan Prize for European History since 1900

Balzan GPC Adviser: Keith Thomas
Project Directors: David Feldman, Mark Mazower
Researchers: Jessica Reinisch, Elizabeth White (postdoctoral fellows)
Affiliated Institution: The School of History at Birkbeck College, University of London
Websites: www.balzan.bbk.ac.uk; http://past.oxfordjournals.org/content/210/suppl_6/9.full

Eric Hobsbawm was President of Birkbeck College at the University of London and Emeritus Professor in its Department of History. His Balzan research project was established there and was directed by David Feldman (Birkbeck College) and Mark Mazower (Columbia University). It comprised a programme of research projects undertaken by two postdoctoral fellows, Jessica Reinisch and Elizabeth White, as well as four workshops and a conference.

Researcher Jessica Reinisch worked on The Reconstruction of the Public Health System in Germany up to 1949. Securing public health was a key component in reconstruction, and the issue of public health had generally received only superficial treatment in the literature on German reconstruction up to that point. Reinisch pursued a comparative analysis of reconstruction in the different German occupation zones, and her research contributed to our understanding of post-war reconstruction in a comparative perspective. Researcher Elizabeth White’s The Return of Soviet Citizens Evacuated to the Urals, Central Asia or Siberia looks both at the experience of return and at the attempts of the Soviet state to administer and control the re-evacuation and to use it as a form of social engineering. Whereas evacuation was a major theme in Soviet historiography, little work had been done on the return process. At the same time, the particular history of return in the Soviet Union presents one instance of a theme that the reconstruction project explores comparatively in a variety of national
contexts. Over the course of the programme, four workshops were held at Birkbeck College: Comparing Europe’s Post-war Reconstructions, October 2005; Relief and Rehabilitation in the Immediate Aftermath of War, June 2006; Displacement and Replacement in the Aftermath of War, 1944-1948, September 2006; Planning, Production and Reconstruction in Post-war Europe, June 2007. A conference, Post-War Reconstruction in Europe, also took place in June 2008. These were attended by an international array of scholars from all over Europe and from the United States.

Publications


The Social Representation of Marxism

Serge Moscovici†

2003 Balzan Prize for Social Psychology

Balzan GPC Adviser: Giovanni Busino

Project Coordinators:
The Social Representation of Marxism: Serge Moscovici, Denise Jodelet
An Exemplary Ethnic Minority: The Case of the Gypsies: Juan Antonio Pérez, Nikos Kalampalikis
Social Psychology: specific international actions: Jean-Claude Abric, Francesca Emiliani, Luisa Molinari, Sylvia Valencia, Lavinia Betea, Luciana Baut (PhD fellowship under Birgitta Orfali)

Affiliated Institution: Fondation Maison des Sciences de l’Homme

Period: 2003-2006 (Social Representation of Marxism); 2003-2007 (Exemplary Ethnic Minority); 2003-2007 (Social Psychology: specific international actions)

Websites: http://remosco.hypotheses.org

Serge Moscovici was Director of the Réseau Mondial Serge Moscovici (REMOSCO) at the Fondation Maison des Sciences de l’Homme.

Three strategies to stimulate research in countries where it was otherwise difficult to achieve training and scientific communication guided Moscovici’s research projects. The first was to help set up research centres in different parts of the world, whether through centres at universities, or in cooperation with other centres or in cooperation with funding from another foundation. For more details on institutions involved, see the Balzan website at http://www.balzan.org/en/prizewinners/serge-moscovici/research-project-french-moscovici. The second strategy was to help researchers across the world, e.g., in Mexico or in Italy, and the third strategy was to help researchers in exploring a specific topic.

In carrying out these projects, the Moscovici project brought together colleagues and young researchers from all the countries already associated with the Laboratoire Européen de Psychologie Sociale (LEPS) in Paris, created over thirty years ago
within the framework of the Maison des Sciences de l’Homme as an international network to support and coordinate the activities of various research groups in social psychology. To this end it dealt with ensuring regular contacts between researchers on topics related to the problems, concerns and the transformations of contemporary European societies, stimulating exchanges in the field of psychosocial analysis, developing joint research, analyzing results obtained in the field of the theory of social representations, and taking part in the organization of international meetings. Its activities also included the publication of articles and books dealing with various theoretical and social questions. In March 2014, some months before his death, Serge Moscovici created a new international network, the Serge Moscovici Global Network (REMOSCO), which guaranteed the continuity of LEPS activities in the Fondation Maison des Sciences de l’Homme in Paris.

Serge Moscovici also supported different editorial projects in the field of social psychology (French translation of Ivana Marková’s *Dialogicity and Social Representations*), and worked closely with Nikos Kalampalikis on *Raison et cultures* (2012) and *Le scandale de la pensée sociale* (2013), both published in the Éditions de l’École des hautes études en sciences sociales (EHESS).

**The Social Representation of Marxism**

One of Moscovici’s projects focused on the social representation of Marxism. Serge Moscovici began studying the diffusion of Marxism approximately twenty years ago. Thanks to the second half of the Balzan Prize, he took this research up again, with the collaboration of Denise Jodelet, Professor at the École des Hautes Études en Sciences Sociales (EHESS).

**An Exemplary Ethnic Minority: The Case of the Gypsies**

A second project dealt with the problem of ethnic minorities which seek to express their identity by becoming protagonists in the playing out of their own destiny. Moscovici concentrated his focus on this culturally rooted and wandering ethnic minority, while Juan Pérez, ordinary Professor at the Universitat de València, and Nikos Kalampalikis, Professor at the University Lyon 2, collected 1,400 questionnaires in seven European countries. Other research was carried out in conjunction with this project. In comparison, but on a more modest scale, a similar study was undertaken with regard to the Indians by Professor Campos in Brazil.
Social Psychology: specific international actions
Serge Moscovici also earmarked the following projects for financing with the second part of his Balzan Prize: studies on the representations of Alter-mondialism by a group of young researchers directed by Professor Jean-Claude Abric, Université de Provence, Aix-Marseille I; a joint psychosocial research project on the rights of the child, led by Professors Francesca Emiliani and Luisa Molinari of the Università di Bologna; a psychological health study carried out by Professor Sylvia Valencia, Universidad de Guadalajara; a modest part of the archival organizational work of Professor Lavinia Betea, lecturer in the Faculty of Political Science at the Universitatea din Bucureşti, which concerned psycho-biographies of leaders of the Romanian Communist Party; a one-year PhD fellowship for Luciana Baut for work on a doctoral thesis in social psychology, “The Representations of European Construction. Between Central Europe and Eastern Europe,” under the direction of Birgitta Orfali, lecturer at Paris-Sorbonne.

Publications

Moscovici, S. “Os ciganos entre perseguição e emancipação (The gypsies between persecution and emancipation).” Sociedade e Estado, Brasília v. 24, n. 3 (2009): 653-678.


Anthony Grafton

2002 Balzan Prize for the History of the Humanities

Balzan GPC Adviser: M.E.H. Nicolette Mout
Researchers: Paul Botley, Dirk van Miert
Affiliated Institution: Princeton University
Period: 2002-2012
Website: https://warburg.sas.ac.uk/research/research-projects#Projects_Scaliger

Anthony Grafton is Henry Putnam University Professor of History at Princeton University. Half of his 2002 Balzan Prize was devoted to the creation of a complete critical edition of the correspondence of the great French humanist and historian Joseph Justus Scaliger (1540-1609), recognized in an era of great encyclopaedic minds as the most learned man in Europe, as documented in Grafton’s fundamental biography of Scaliger (Joseph Scaliger. A Study in the History of Classical Scholarship, Vol. I. Textual Criticism and Exegesis, Oxford 1983; Vol. II. Historical Chronology, Oxford 1993). Despite Scaliger’s central role in the transnational community of the sixteenth and seventeenth centuries, his letters, in French and Latin, are especially rich, but they had never been edited or analysed as a whole.

Thus the Scaliger Project was established at the Warburg Institute in September 2003 by Professor Anthony Grafton, and two editors, Dr. Paul Botley and Dr. Dirk van Miert, were appointed to undertake this task. The surviving correspondence of Joseph Scaliger amounts to some 1,650 letters, written between 1561 and 1609. The entire correspondence has been transcribed and collated with its extant sources; this text has been edited and provided with a full textual apparatus; every letter has been provided with textual and contextual headnotes as well as an English synopsis.

Publications

Social Integration in Modern Democratic Societies

Dominique Schnapper
2002 Balzan Prize for Sociology

Balzan GPC Advisers: Walter Rüegg†; Hélène Carrère d’Encausse
Researchers: Chantal Bordes-Benayoun, Beate Collet, Eran Gündüz, Lena Inowlocki, Freddy Raphaël, Corinne Rostaing, Emmanuelle Santelli, Mahnaz Shirali, Caroline Tourat
Affiliated Institution: Fondation Maison des Sciences de l’Homme
Period: 2002-2012

Dominique Schnapper is Director of Research at the École des Hautes Études en Sciences Sociales (EHESS) in Paris and Honorary Member of the Conseil Constitutionnel, France. She used the second half of her 2002 Balzan Prize for Sociology for a fourfold research project on social integration of marginalized groups in modern society. It was designed to allow colleagues and young researchers to further develop already initiated work within a shared framework and aims: a major quantitative inquiry on the problems of citizenship in France.

The first, An Investigation on Jews in France, was an empirical inquiry study undertaken in Toulouse by Chantal Bordes-Benayoun (Université de Toulouse II - Le Mirail), in Strasbourg by Freddy Raphaël (Université Marc Bloch de Strasbourg) and in Paris by Dominique Schnapper (EHESS). The results, together with a wider historical and sociological reflection on the changing relationships between all ethnical identities and citizenship, were published in La condition juive en France : La tentation de l’entre-soi by Schnapper, Bordes-Benayoun and Raphaël.

In the second project, Islam and Democracy, Mahnaz Shirali (Maison des Sciences de l’Homme) addressed the issue of the compatibility between Islam and democracy with a thorough inquiry based on participant observation in three different suburban areas of Paris and 150 interviews with young Muslims who live there. Focusing on multiple constructions of religiosity within young members of families who migrated to France from the Maghreb, this work was concerned with the place of Islam within

The third project, *Mixed Couples and Immigrant’s Families: a Comparison between France and Germany*, can be placed among a number of comparative studies on mixed couples and immigrant families in France and Germany carried out under the responsibility of Beate Collet and Emmanuelle Santelli (Université de Lyon 2). Taken altogether, these studies have provided new insights on the interdependence of marital choice, family patterns and different ways to combine familial cultural references with participation in social life. The main results are summarized in a series of publications from 2004 to 2008. The expertise acquired by this research group thanks to the support of the second half of the Balzan Prize awarded to Dominique Schnapper allowed them to apply and obtain a grant from the Ministère de l’Immigration, de l’Intégration, de l’Identité nationale et du Développement solidaire. Finally, the enquiry helped bring about a new international effort of cooperation at the European level through the *Mixcoup* project (Mixed couples and transcultural hybridization) designed to train young researchers. Besides Emmanuelle Santelli and Beate Collet, the German researchers who took part in the Balzan Project together with other partners from Spain, Turkey and Greece worked on the project. A comprehensive work on mixed couples and transcultural hybridization was concluded in 2010 and published by the Presses Universitaires de France (*Couples d’ici, parents d’ailleurs: Parcours de descendants d’immigrés*).

Researchers Corinne Rostaing and Caroline Tourat worked on the fourth project, *Social Bond and Citizenship in Prison*, which dealt with the sociology of punishment, in particular, questions of citizenship and inmates’ rights and responsibilities. Rostaing also used this empirical research to complete a study on the prison as a non-democratic institution. A synthesis of this empirical research under the title *L’institution dégradante. Essai sociologique sur la prison* is planned for publication.

**Publications**


The James Ackerman Award
and
Summer School in Applied Palaeography

James Ackerman†
2001 Balzan Prize for the History of Architecture
(including town planning and landscape design)

Balzan GPC Adviser: Dmitry O. Shvidkovsky
Researchers and Project Directors: Valeria Cafà, Matthew A. Cohen, Angela Dressen, Daniel McReynolds, David Rifkind, Federica Rossi, Leo Schubert (Ackerman Prize recipients); Christopher S. Celenza, Professor of European History, the University of Michigan (Director of the Summer School in Applied Palaeography)
Affiliated Institutions: CISA - Centro Internazionale di Studi di Architettura Andrea Palladio (Ackerman Award); American Academy in Rome (Summer School in Applied Palaeography)
Period: 2005-2013 (Ackerman Award); 2002-2005 (Summer School in Applied Palaeography)
Website: www.premioackerman.it (Ackerman Award)

James Ackerman was Professor Emeritus at Harvard University in Cambridge, Massachusetts.

I. The James Ackerman Award
He created the James Ackerman Award in the History of Architecture by donating part of the second half of his Balzan Prize to the Centro Internazionale di Studi di Architettura “Andrea Palladio” in Vicenza. The award was for the publication of an important, original work in any period in the history of architecture by one or two scholars of any nationality who had not yet published any books. The first was conferred in 2005, and the last in 2013.

In January 2018, the Swiss Centre in Milan hosted “Architettura: una storia. Ricordando James Sloss Ackerman”, an evening in memory of the Prizewinner organized by the
International Balzan Foundation “Prize” together with the Consulate General of Switzerland in Milan and CISA Palladio (Centro Internazionale di Studi di Architettura) in Vicenza. The young historians of architecture presented their studies which were published thanks to the second part of the Balzan Prize awarded to Ackerman.

Publications of the James Ackerman Award


II. The Summer School in Applied Palaeography

Another part of the second half of James Ackerman’s Balzan Prize was destined to the creation of a Summer School in Applied Palaeography at the American Academy in Rome. The program focused on the analysis of texts from Roman antiquity to the Renaissance in Europe, and was consistent with Ackerman’s way of studying Renaissance architecture “based on a systematic critical examination of written and visual sources”, as the motivation for the Balzan Prize reads. The courses were offered free of charge to graduates and scholars of various nationalities chosen according to their curricula.
The Comte de Caylus (1692-1765) and His Milieu: The Respublica Literaria

Marc Fumaroli

2001 Balzan Prize for Literary History and Criticism (post 1500)

Balzan GPC Advisers: Walter Rüegg†, Karlheinz Stierle

Researchers: Xavier Dufestel, Cordélia Hattori, Nicola Iodice

Affiliated Institution: Institut de France

Period: 2001-2011

Marc Fumaroli is Professor Emeritus at the Collège de France, and at the Sorbonne. He is also a member of the Académie Française and Académie des Inscriptions et Belles-Lettres. With the second half of his Balzan Prize, Fumaroli involved three young scholars in a long-term study of the life and works of Anne-Claude-Philippe de Pestels de Lévis de Thubières-Grimoard, comte de Caylus (1692-1765) and of his milieu. The funds were also used for an array of cultural initiatives (conferences, symposia and academic lectures) which were instrumental to foundation of an interdisciplinary research institute on the history of the Republic of Letters. The Institut européen d’histoire de la République des Lettres – Respublica Literaria – was officially established in 2006, with support from the Ministère de l’Enseignement supérieur et de la Recherche as well as the Ministère de l’Éducation nationale, and is now based at the École normale supérieure de Paris. The administration of the Balzan funds was entrusted to the Institut de France.

Cordélia Hattori (Musée de Lille) worked mainly on the official documents, which shed light on the finances of comte de Caylus, his genealogy and his many relationships, including his influence on the Académie Royale de Peinture et de Sculpture and on the Académie des Inscriptions et Belles-Lettres. Nicola Iodice focused on his correspondence and, in collaboration with Xavier Dufestel, determined the precise chronology of his life, his studies and his intellectual and personal relationships. Le comte de Caylus, Mémoires et Carnets des voyages, edition intégrale, annotée et illustrée by Jacqueline Hellegouarch, Cordélia Hattori, Catherine Hémon-Fabre, under
the direction of Marc Fumaroli in the collection République des Lettres, République des Arts has yet to be published.

**Publications**


Physical, Mathematical and Natural Sciences, and Medicine
Theories of Quantitative Character Evolution and Stochastic Population Dynamics

Russell Scott Lande
2011 Balzan Prize for Theoretical Biology or Bioinformatics

Balzan GPC Adviser: Charles Godfray
Researchers: Emmanuelle Porcher, Céline Devaux
Affiliated Institution: Imperial College London
Period: 2012-2015

Russell Scott Lande is Royal Society Research Professor at Imperial College London. With the second part of his Balzan Prize, Lande supported young researchers at the postdoctoral and graduate student levels. Two experienced postdoctoral researchers were employed through Imperial College London, Silwood Park Campus, modeling the joint evolution of mating systems, flowering phenology and inbreeding depression in plants. Both were based at their home institutions in France: Emmanuelle Porcher at the Musée national d’Histoire naturelle and Céline Devaux at Université Montpellier 2, doing collaborative research supervised by Professor Lande, with frequent visits to Silwood Park by them and to their home institutions by Professor Lande.

The Centre for Conservation Biology (CCB) organized a workshop entitled Stochastic demography in fluctuating environments: theory and empirical patterns from 23 to 27 April 2012. The workshop was aimed at young scientists in the initial stages of their scientific career and focused on models for describing the demography of populations in fluctuating environments, methods for estimation of parameters from data and presentations of empirical examples that illustrate the practical application of this quantitative approach for understanding dynamics of populations. Central topics covered were the concepts of demographic and environmental stochasticity, density-dependence in age-structured populations, techniques for estimating key parameters in age-structured models, spatial synchrony in population fluctuations, population viability analyses and community dynamics.
A major part of the workshop was comprised of introductory lectures by Professors Steinar Engen, Russell Lande and Bernt-Erik Sæther. The aim of these lectures was to give an overview of the theories in stochastic population dynamics and demography, to show their significance for general understanding of principles explaining patterns in fluctuations of natural populations and to demonstrate how these models could be parameterized using data from different model systems. The second part of the course consisted of exercises in practical applications of the models in analyses of data using a multitude of computer programmes mainly developed by researchers at CCB. These practicals were supervised by Professor Jarle Tufto and Researcher Vidar Grøtø. The final part of the course consisted of short presentations in which the participants presented their own research.

Research was conducted with Dr. Céline Devaux, who was hired as a consultant for three summers, and with Dr. Emmanuelle Porcher, who was hired as an employee of Imperial College London for two years beginning September 2012. Results to date include five published papers and one submitted, and two manuscripts in preparation. The research focuses on developing quantitative theories of the evolution of plant mating systems, particularly mixed self-fertilization and outcrossing, as influenced by pollination ecology and the evolution of inbreeding depression.

Publications


An Oxford New College-Johns Hopkins Centre for Cosmological Studies

Joseph Ivor Silk
2011 Balzan Prize for The Early Universe (from the Planck Time to the First Galaxies)

Balzan GPC Adviser: Bengt Gustafsson
Project Directors: Chris Lintott (Project Director); Adrienne Slyz, Marc Kamionkowski, John March-Russell (Advisory Committee)
Researchers: Debika Chowdhury, Deandra Cutajar, Harry Desmond, Rebekka Bieri, Salvatore Cielo, Ryan Brennan, Julien Devriendt, Mark Richardson, Irina Dvorkin, Alessandro Lupi, Dipanjan Mukherjee, Marina Trevisan
Affiliated Institution: New College, University of Oxford
Period: 2013-2017
Website: http://balzan.new.ox.ac.uk/

Joseph Ivor Silk is at the Institut d’Astrophysique of the Pierre and Marie Curie-Sorbonne Universities in Paris. He is also Homewood Professor in the Department of Physics and Astronomy at Johns Hopkins University in Baltimore, Fellow at New College, and Senior Fellow in the Beecroft Institute of Particle Astrophysics and Cosmology of the Department of Physics at the University of Oxford.

Silk has designated part of his Balzan research funds for the creation of a Centre for Cosmological Studies based at New College Oxford and at the Department of Physics and Astronomy at the Johns Hopkins University in Baltimore. It also involves the Oxford University Department of Physics and the Institut d’Astrophysique of the Pierre and Marie Curie-Sorbonne Universities in Paris. The Centre’s goal is to provide Balzan grants for young researchers in cosmology in frontier areas of research that are consistent with the scientific themes supported by the Centre, and to establish international links among leading young researchers to develop scientific interactions and collaborations that will benefit their careers as well as enhance the scientific life of the partner institution.
The first grants were awarded in the autumn of 2013 to Visiting Junior Research Fellows hosted at the institutions mentioned above. During the first three years of operation of the Oxford New College-Johns Hopkins Centre for Cosmological Studies, some twenty-four young researchers were hosted at the participating institutions for periods of up to two months each. The researchers were selected from a large field of candidates, and chosen because of their outstanding science potential and their interactivity with cosmology faculty at the participating institutions. The goal is to choose brilliant young researchers who will boost their careers by developing new collaborations. Several visited New College, while others were at the Johns Hopkins University at IAP, Paris.

The New College Balzan fellows initiated a series of Balzan Conversations, well-attended informal discussions about their research, to which the New College fellowship as well as undergraduate and postgraduate physics students were invited. New College Balzan guests also participated in many high table and lunchtime discussions with fellows. Their research interests spanned subjects including the origin of cosmic structure and the fossil radiation echo from the Big Bang.

An indication of the success of the programme may be gleaned from the fact that nearly 50% of the researchers were doctoral students and one-third were female, all first-choice candidates and highly likely to continue successful careers in research boosted by the opportunity offered by the Balzan grant to Silk for enabling them to become better acquainted with leading institutions. As in previous years, in 2016-2017 researchers were selected from a large field of candidates, chosen with support from faculty at each institution and based on their potential to carry out outstanding work of international importance. While the centres work remains focused on cosmology, 2016-2017 has seen a broader scientific reach than ever before. Moreover, the program reaches participants at crucial times in their careers, namely at the end of their PhD work or in transition to a first postdoctoral fellowship. Balzan funds help them make these transition points scientifically productive, thus ensuring that Balzan scholars go on to great careers.

2017 candidates: Debika Chowdhury, a doctoral researcher at the Indian Institute of Technology in Madras, visited the Institut de Astrophysique in Paris to work on the study of the phase space of initial conditions for inflationary models. Deandra Cutajar, a doctoral researcher at the Institute of Space Sciences and Astronomy at the University of Malta, visited the University of Oxford to conduct research related to
the noise bias reported in shear lensing measurements, developing a new algorithm to be tested and confronted against noise galaxy image situations. Harry Desmond, doctoral researcher at the Kavli Institute for Particle Astrophysics and Cosmology at Stanford University, also visited Oxford. He is engaged in work to lay the groundwork for a systematic investigation of gravity at the galaxy scale by mapping out the gravitational field over the galaxy environments which exist in the local universe. Results were published in 2018.

2016 candidates: Rebekka Bieri, a postdoctoral researcher at the Institut de Astrophysique in Paris, visited the University of Oxford to work on radiation-driven AGN feedback in high-redshift galaxies, with an article published in 2017. Salvatore Cielo, another postdoctoral research at the Institut de Astrophysique in Paris, also visited the University of Oxford, where he focused on the development of new techniques involving numerical simulations (starting with his work on models for AGN feedback in galaxies) and presented some recent results on jets in galaxy clusters and individual galaxies. Ryan Brennan, a postdoctoral researcher from Rutgers University, visited the University of Oxford to work with Julien Devriendt and former Balzan fellow Mark Richardson to learn how to work with the outputs of the Horizon-AGN and Horizon-noAGN simulations in order to begin a project to mock observed winds launched by feedback in simulated galaxies. Irina Dvorkin, a postdoctoral researcher at the Institut de Astrophysique in Paris, visited Johns Hopkins University to work with Professor Silk to develop a framework that combines galaxy and stellar evolution models and use it to predict the detention rates of merging binary black holes by Advanced LIGO. Alessandro Lupi, a postdoctoral researcher at the Institut de Astrophysique in Paris, visited Johns Hopkins University to work on the effect of super-massive black hole binaries (MBHBs) on the – possibly present – dark matter spike formed around the most massive black hole (MBH). Dipanjan Mukherjee is a postdoctoral research at the Research School of Astronomy and Astrophysics at Australian National University in Canberra. He visited Johns Hopkins University to engage in research simulating how relativistic jets affect the host galaxy’s interstellar medium (ISM) before affecting gas at large extragalactic scales. Together with Professor Silk, he identified new potential areas of investigation focusing on the effect of intermediate mass black holes on smaller dwarf galaxies. Publications are in preparation. Marina Trevisan, a postdoctoral researcher was hosted by Gary Mamon at the Institut de Astrophysique in Paris, where she tackled questions associated with quenching the star formation in galaxies up to large cluster centric distances. The outcome of her study will have
important implications for understanding how the large-scale environment affects galaxy evolution.

For further information on Silk’s research project awardees from 2013 to 2015 and their publications, see the fourth edition of the Overview on the International Balzan Foundation Website: http://www.balzan.org/en/prizewinners/joseph-ivor-silk/research-project-silk.

Publications
The following list includes publications of the following former participants in Joseph Silk’s research project: Razieh Emami Meibody (2015), Joakim Rosdahl (2015), Cora Uhlemann (2015), Francesco De Bernardis (2014), and Zachary Dugan (2014).

Dynamical Systems, Chaotic Behaviour: Uncertainty, Linear Cocycles and Lyapunov Exponents

Jacob Palis

2010 Balzan Prize for Mathematics (pure and applied)

Balzan GPC Adviser: Étienne Ghys
Project Director: Jean-Christophe Yoccoz†, Supervisor
Affiliated Institution: Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro
Period: 2011-2015

Jacob Palis is a Professor at the Instituto de Matemática Pura e Aplicada (IMPA) in Rio de Janeiro. The objective of his research project involved scientists from different regions of the world, in particular, talented young mathematicians. One of its main goals is to advance a Global Conjecture, stated by Palis twenty years ago, concerning the finiteness of the number of attractors for typical dynamics in closed manifolds. Other important topics were linear cocycles and Lyapunov exponents. Coordinated together with Fields Medalist Jean-Christophe Yoccoz (Collège de France) at the Instituto de Matemática Pura e Aplicada, IMPA, Rio de Janeiro, Brazil, the project set out to study (and hopefully prove) a set of conjectures for dynamical systems leading to a global perspective in this important branch of mathematics.
The Research Project was scheduled to take place from 2011 to 2015, with part of the funds supporting the activities of young researchers at IMPA in research on *Dynamical Systems, Chaotic Behaviour-Uncertainty*. Three Palis-Balzan Symposia on Dynamical Systems also took place during that period. The first was held at IMPA in 2012, and the following two Symposia took place at the Institut Henri Poincaré in Paris in 2013 and 2015. These symposia were designed to review advances and to stimulate further progress along the lines of the research project.

The Third Palis-Balzan Symposium on Dynamical Systems was organized by IMPA and Collège de France, with support from CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), CNRS, ANR, IMPA (Associação Instituto Nacional de Matemática Pura e Aplicada), Institut Henri Poincaré, Mairie de Paris, Université Paris 13 and Université Paris-Sud 11. It aimed at promoting research at the highest level in the area of dynamical systems, with the effective participation of outstanding groups of researchers at the world level. The Symposia also aimed at putting doctoral students and young researchers in touch with the best of what is produced worldwide on the above and related topics, disseminating recent results and providing high level international scientific exchange of ideas and results. In particular, it stimulated the further development of the Brazilian group in the area.

The Organizing Committee of the Third Symposium was comprised of Sylvain Crovisier (CNRS), Jacob Palis (IMPA), Carlos Matheus Santos (CNRS) and Jean-Christophe Yoccoz (Collège de France); the members of the Scientific Committee were Artur Avila (IMPA and CNRS), Sylvain Crovisier (CNRS), Michael Lyubich (SUNY at Stony Brook - USA), Welington de Melo (IMPA), Carlos Gustavo Moreira (IMPA), Jacob Palis (IMPA), Enrique Pujals (IMPA), Carlos Matheus Santos (CNRS), Marcelo Viana (IMPA) and Jean-Christophe Yoccoz (Collège de France).

The following papers were presented at the Third Palis-Balzan Symposium on Dynamical Systems: Artur Avila (IMPA and CNRS), Continuity of Lyapunov exponents for random matrix products; Lucas Backes, Continuity of Lyapunov Exponents for Fiber-Bunched Cocycles; Jairo Bochi (PUC-Chile), Ergodic optimization and prevalence; Ricardo Bortolotti (UFPE), Physical measures for certain partially hyperbolic attractors on 3-manifolds; Christian Bonatti (Université de Bourgogne-Dijon), Singular hyperbolicity and star flows; Gonzalo Contreras (CIMAT), The C2 Mañé’s Conjecture on Surfaces; Lorenzo Diaz (PUC-RJ), The entropy spectrum of Lyapunov exponents in non-hyperbolic skew-products; Elise Goujard, Counting
Another International Conference on Dynamical Systems was held from 4 to 8 July 2016 in Rio de Janeiro. Jacob Palis (IMPA) acted as Coordinator, and the other members of the Organizing Committee were Artur Avila (IMPA and CNRS), Sylvain Crovisier (CNRS), Carlos Matheus Santos (CNRS Paris, France), Marcelo Viana (IMPA) and Jean-Christophe Yoccoz (Collège de France).

Invited speakers included: Lucas Backes (Universidade Federal do Rio Grande do Sul), Continuity of Lyapunov Exponents is Equivalent to Continuity of Oseledets Subspaces; Christian Bonatti (Université de Bourgogne - Dijon), (Multi)singular hyperbolic structures; Milton Cobo (Universidade Federal do Espirito Santo), Wandering intervals for affine perturbations of the Arnoux-Yoccoz family; Javier Correa (UFRJ), Transitivity of covering maps from the torus without resonance;
Sylvain Crovisier (CNRS-France), Finiteness of measures maximizing the entropy for surface diffeomorphisms; Romain Dujardin (Université Paris Est Marne La Vallée), Non-density of stability for holomorphic mappings on \( P_k \); Fayad Bassam (Institut de Mathématiques Jussieu), Lebesgue spectrum for area preserving flows on the two torus; Nicolas Gourmelon (Université de Bordeaux), Projectively Anosov diffeomorphisms of surfaces; Pierre-Antoine Guihéneuf (Universidade Federal Fluminense), Physical measures of \( C^1 \) generic diffeomorphisms: what see the discretizations; Carlos Gustavo Moreira (IMPA), On the fractal geometry of horseshoes in arbitrary dimensions; Kei Irie (Kyoto University), A \( C^\infty \)-closing lemma for three-dimensional Reeb flows via embedded contact homology; Vadim Kaloshin (University of Maryland), On deformational spectral rigidity of convex symmetric planar domains; Alejandro Kocsard (Universidade Federal Fluminense), On the dynamics of minimal homeomorphisms of \( T_2 \); Patrice Le Calvez (Institut de Mathématiques de Jussieu), Orbit forcing theory for surface homeomorphism; Fernando Lenarduzzi (IMPA), The ergodicity of the restricted three-body problem: the Hénon-Devaney map; Mikhail Lyubich (SUNY at Stony Brook), On the dynamics of dissipative complex Henon maps; Karina Marin (IMPA), Lyapunov exponents of partially hyperbolic volume-preserving maps with 2-dimensional center bundle; Welington de Melo (IMPA), Rigidity of critical circle maps; Vilton Pinheiro (Universidade Federal da Bahia), On the flexible concept of ergodicity; Tali Pinsky (Tata Institute of Fundamental Research), A topological approach to the Lorenz equations; Mauricio Poletti (IMPA), Simple Lyapunov spectrum for certain linear cocycles over partially hyperbolic maps; Rafael Potrie (Centro de Matemática, Universidad de la República), Entropy rigidity for surface group representations; Enrique Pujals (IMPA), On the \( C^r \)-typicality of coexistence of infinitely many sinks; Sergio Romaña (Universidade Federal do Rio de Janeiro), The Hausdorff Dimension for Geometric Lorenz Attractor; Martín Sambarino (Facultad de Ciencias del Uruguay), Rotation set and entropy for attracting anular continua; Michele Triestino (Universidade Federal Fluminense), Markov partitions for groups of circle diffeomorphisms; Ricardo Turolla Bortolotti (Universidade Federal de Pernambuco), Physical measures for certain partially hyperbolic attractors on 3-manifolds; Jiangong You (Nanjing University), On Lyapunov exponent and Avila’s acceleration of quasi-periodic Schrödinger cocycles.

For the programmes of the first two Palis-Balzan Symposia, the reader is referred to previous editions of the Overview of the Balzan research projects, which are available on the Balzan Foundation website at http://www.balzan.org/en/documents/publications.
Molecular Basis during iPS Cell Generation and Its Application

Shinya Yamanaka

2010 Balzan Prize for Stem Cells: Biology and Potential Applications

Balzan GPC Adviser: Nicole Le Douarin
Researchers: Hirohide Saito, Takashi Aoi
Affiliated Institution: Kyoto University
Period: 2011-2017

Shinya Yamanaka is Director of the Center for iPS Cell Research and Application (CiRA) at Kyoto University, Senior Investigator at the Gladstone Institute of Cardiovascular Disease in San Francisco, and Professor of Anatomy at the University of California, San Francisco. Yamanaka planned a five- to six-year research project on molecular mechanisms and application of induced pluripotent stem (iPS) cells at the Center for iPS Cell Research and Application (CiRA) at Kyoto University. CiRA hired one young faculty member, Dr. Saito, to promote the research to control cell fate using synthetic RNA-based gene manipulation technologies. His laboratory developed unique synthetic RNA molecules in order to detect and purify target cells derived from iPS cells and control the fate of target cells depending on intracellular environment. He was responsible for the research project aimed at developing new methods to control mammalian cell fate with high safety and purity using artificial RNA switches and circuits. These RNA systems detect specific protein and/or RNA expressed in target cells and then control gene expression.

Advances made in 2015 included the successful development of synthetic “microRNA switches”, pointing to next-generation technology for control of gene expression and stem cell engineering. In their latest work, the Saito group developed a method that makes it possible to detect and purify target live cell populations derived from human iPS cells. In addition, the Saito group succeeded in constructing synthetic gene circuits that selectively control the cell fate by RNA-only delivery. Because these circuits are entirely RNA-based, they would be safer
to use in cells than their DNA-based counterparts and therefore available for a number of biomedical applications. Recently, the Saito group demonstrated their miRNA switch technology that can be used to regulate the CRISPR-Cas9 system that engineers the genome of target cells. The new biotechnology tool is called the “miR-Cas9 switch”, in which the genome editing activity of Cas9 can be modulated through endogenous miRNA signatures in mammalian cells. They succeeded in distinguishing human iPS cells and differentiated cells for genome editing, which may be used for future in vivo genome editing.

In early 2013, Shinya Yamanaka decided to use the second part of his prize to spread iPS cell research over institutes other than CiRA, with Dr. Aoi at Kobe University to study recapitulation of several intractable diseases, including cancer, by iPS cell technology. In 2013, a new laboratory for the Aoi Group was built at the Kobe University graduate school of medicine. The basic arrangement of the study environment and the measures for regulations with which the iPS cell establishment or induction to various cell differentiation can be conducted have already reached completion. Until 2016, various projects for hepatology, gastroenterology, neurology, urology, dermatology, diabetology, endocrinology, haematology and oncology, in collaboration with more than ten clinical departments have been launched to cure intractable diseases.

Aoi’s group also focuses on cancer stem cells, which have been suggested to be the potential for self-renewal and tumorigenesis in certain cancers. Inspired by iPS cell technology, Aoi’s group successfully established a novel technology to induce cancer stem cell (CSC) properties in intestinal cancer cells by introducing defined factors and collecting the cells with CSC properties, which leads to a further understanding of cancer disease mechanisms and medical applications. Currently, in addition to working on generation and analyses of induced cancer stem cells from various types of human cancer cells such as lung cancer cells, they are also constructing various carcinogenesis models using several types of human iPS cell-derived cells.

**Publications**


Oshima N, Yamada Y, Nagayama S, Kawada K, Hasegawa S, Okabe H, Sakai Y, Aoi


Improving the Performance of the Dye Sensitized Solar Cell (DSC)

Michael Grätzel
2009 Balzan Prize for the Science of New Materials

Balzan GPC Adviser: Nicola Cabibbo†
Researchers: Aravind Kumar Chandiran, Aswani Yella
Affiliated Institution: École Polytechnique Fédérale de Lausanne (EPFL)
Period: 2010-2014

Michael Grätzel is a Professor at the École Polytechnique Fédérale de Lausanne (EPFL) and Head of its Laboratoire de photonique et interfaces (LPI). The Balzan research project that he proposed aimed to improve the performance of the Dye Sensitized Cell (DSC), commonly known as the Grätzel Cell, by increasing the overall efficiency of this kind of photovoltaic cell from its present 12.3 to nearly 15 percent, which would strongly contribute to making the DSC a widely used method for electricity production from sunlight.

With the second half of the 2009 Balzan Prize for the Science of New Materials, the Laboratory of Photonics and Interfaces at the École Polytechnique Fédérale de Lausanne (EPFL), directed by Michael Grätzel, acquired an Atomic Layer Deposition System for the Laboratory and hired Dr. Aswani Yella as a postdoctoral fellow for two years. A sum was also set aside to support visits of students and researchers from Italian universities within a framework of collaboration on the research project.

Adopting an experimental approach to the design of the Grätzel Cell, the Balzan research project focused its attention on the interface that separates the materials used in the device for transporting the negative charge carriers (electrons) and positive charge carriers (called holes). It explored several new strategies to retard the interfacial charge carrier recombination rate. The research was conducted to improve the self-assembly of the dye molecules in order to form more compact films at the surface. Grätzel’s research group modified the chemical structure of the dye molecules to
endow them with long alkyl chains enhancing their lateral attraction, which was expected to increase the packing of dye molecules retarding the unwanted interfacial recombination of negative and positive charge carriers. The group also attempted to use additives in the electrolyte that would promote the formation of dense monolayers of dye molecules. Judicious engineering of the interface retarded the interfacial charge carrier recombination, increasing the open circuit voltage and cell efficiency.

The work on introducing the ALD overlayers on the surface of the mesoscopic titania films to stop interfacial charge recombination was carried out by Aravind Kumar Chandiran. Aswani Yella tested the films prepared by Dr. Chandiran to realize gains in voltage output and overall efficiency as foreseen in the proposal.

**Publications**


Brenda Milner

2009 Balzan Prize for Cognitive Neurosciences

Brenda Milner is Dorothy J. Killam Professor of Psychology at the Montreal Neurological Institute and Professor in the Department of Neurology and Neurosurgery at McGill University. The research project funded with the second part of the Balzan Prize awarded to Dr. Milner seeks to illuminate the nature of hemispheric interaction in the human brain and to show how the integration of information between the two hemispheres enables remembering. To this end, fine-grained behavioural paradigms were combined with conventional functional magnetic resonance imaging (fMRI) experiments as well as newly emerging tools in fMRI (resting-state fMRI) to allow the examination of patterns of interaction between distant brain regions. Dr. Milner’s lab studied a cohort of healthy young right-handed subjects in order to determine how individual differences in patterns of hemispheric connectivity relate to the natural variation in capability for different types of memory task and to the cognitive strategies adopted by each individual.

The project has made significant progress. Neuroimaging and neuropsychological data from 30 healthy participants have been collected, and data has been analyzed. Xiaoqian Jenny Chai joined Milner’s team in September 2015 to assist with this analysis. Dr. Chai, who has a multidisciplinary quantitative background, is a research affiliate of the McGovern Institute for Brain Research at the Massachusetts Institute of Technology, with expertise in resting-state fMRI analysis.

Two aspects of the study have yielded results of interest. With respect to the task-based fMRI, Dr. Milner’s team is currently in the process of writing a manuscript
related to the role of imagery in facilitating memory, including specific contributions of the left inferior frontal cortex and left hippocampus. Preliminary results of this work were presented in 2015 at the Annual Meeting for the Organization for Human Brain Mapping. The findings shed light on some of the current issues related to hippocampal contributions to memory. In the second manuscript in preparation, her team combined behavioural data with resting-state fMRI and found a link between interhemispheric-connectivity measures in the posterior hippocampus and memory test scores, showing that individuals with stronger interhemispheric connectivity have higher performance on two specific memory tasks.

As the next phase, Dr. Milner’s team have initiated an inter-institutional collaboration with a team at Bordeaux University in France to further investigate the relationship between interhemispheric organization and cognition. The Neuroimaging Group at Bordeaux, headed by Bernard Mazoyer and Nathalie Tzourio-Mazoyer, has been interested in asking similar questions about the behavioural and neural correlates of hemispheric specialization and interhemispheric integration, and this group has collected a unique dataset of nearly 400 healthy volunteers balanced for gender and handedness (BIL&GIN: Mazoyer et al. 2016). These participants have completed an extensive battery of cognitive tests and have also undergone structural (anatomical and diffusion-weighted MRI) and functional (task-based and resting-state fMRI) brain-imaging sessions. Mutual visits of the lab members were planned to work on the dataset in order to ask specific questions regarding the role of interhemispheric connectivity architecture in shaping individual differences in memory functions.

To summarize, Dr. Milner’s lab is in the process of preparing two manuscripts based on the neuroimaging and neuropsychological assessment of 30 healthy subjects; and engaging in a new collaboration with the Bordeaux team to use a large-scale dataset that allows further investigation of hemispheric connectivity architecture and individual differences in cognition.
Wallace Broecker
2008 Balzan Prize for Science of Climate Change

Past Patterns of Precipitation and Earth Temperature

Wallace Broecker

Wallace Broecker is Newberry Professor of Earth and Environmental Sciences at Columbia University. He dedicated 90% of his Balzan Prize to his research project, which had the general aim of determining whether the paleoclimate record can support the prediction that precipitation will be more strongly focused on the Equator as the planet is warmed by fossil fuel CO$_2$. Lacking an adequate warm analogue, a cold one – namely, the situation during the last glacial period – has already been used with encouraging results (i.e., less focusing of rainfall on the tropics during colder times). However, possible flaws in the cold analogue have yet to be evaluated. Research activities focused on data from different sources, including deep sea sediments and closed-lake basin size, cave deposits and ice core records.

Wallace Broecker supported three postdoctoral fellows. Jimin Yu (PhD, University of Cambridge) had demonstrated that the boron to calcium ratio in the CaCO$_3$ shells of bottom dwelling open ocean foraminifera are tightly correlated with the extent of carbonate ion undersaturation. At Lamont-Doherty Earth Observatory at Columbia University, he used this method to reconstruct the evolution of deep ocean carbonate ion concentration from the glacial maximum (~25 kyrs ago) to the present. His goal was to evaluate the role of deep ocean chemistry in the rise of atmospheric CO$_2$ content at the close of the last glacial period. Xianfeng Wang (PhD, University of
Minnesota) had created an 18O record for stalagmites in Brazil and showed that millennial duration fluctuations in monsoon rainfall were exactly antiphased with those in China. At Lamont-Doherty Earth Observatory, he continued this research, but also diversified his efforts by measuring the concentrations of 234U, 230Th, 231Pa and 10Be in sediments from the abyssal ocean. In so doing, he followed up on research done by Richard Ku in the 1970s with modern instrumentation. Irene Schimmelpfennig (PhD, France, on the production rate of 36Cl in separated minerals) worked with Joerg Schaefer’s group at Lamont-Doherty Earth Observatory to pursue the use of 36Cl and 10Be in what is termed “cosmic-ray exposure dating”. During the last few years, working with Aaron Putnam and Yonathan Goldsmith, Broecker has used the paleo record to show that the preferential CO₂ warming of the northern hemisphere will cause the planet’s rainbelts to undergo a northward shift.

Publications

See the extensive bibliography in the previous editions of the Overview, which can be consulted at: http://www.balzan.org/en/prizewinners/ wallace-s--broecker/research-project-broecker.
Immune Regulation
and Therapeutic Immunisation

Ian Frazer
2008 Balzan Prize for Preventive Medicine, including Vaccination

Balzan GPC Adviser: Werner Stauffacher
Researchers: Antje Blumenthal, Steven Mattarollo
Affiliated Institution: Diamantina Institute, University of Queensland
Period: 2008-2013

Ian Frazer is a former Director of the Translational Research Institute in Brisbane and Research Group Head at the University of Queensland Diamantina Institute. He used the funds available from his 2008 Balzan Prize to support two fellows, Antje Blumenthal and Steven Mattarollo, who were based with Frazer’s group at the University of Queensland, Brisbane. Blumenthal investigated how pathogens are recognized by the immune system, how appropriate inflammatory responses are initiated and regulated, and how this instructs adaptive immune responses that are critical to control chronic infections.

Steven Mattarollo was funded for two years to work in Melbourne, Australia, with Professor Mark Smyth, an acknowledged world expert on the role of NKT cells in control of cancer cell growth. During these two years as a Balzan Fellow he pursued two main lines of research: developing a therapeutic cancer vaccine against melanoma and non-Hodgkins B cell lymphoma that induces innate and adaptive immunity by targeting the immune adjuvant properties of NKT cells; determining the immune constituents that are important for the therapeutic effectiveness of chemotherapies, and assessing combination chemo-immunotherapy strategies for treating solid tumours.
Publications


Endogenous Activators of Inflammation in Insects and Mammals

Bruce Beutler and Jules A. Hoffmann
2007 Balzan Prize for Innate Immunity

Balzan GPC Adviser: Nicole Le Douarin
Researchers: Carrie Arnold, Michael Berger, Amanda Blasius, Philippe Krebs, Oren Milstein, Lei Sun, Sungyong Won (Beutler laboratory); Hidehiro Fukuyama, Anne Kaukinen (Hoffmann laboratory)
Affiliated Institutions: Centre International de Recherche aux Frontières de la Chimie, Strasbourg; The Scripps Research Institute, La Jolla CA
Period: 2008-2012

Bruce Beutler is Professor and Chairman of the Department of Genetics at Scripps Research Institute in La Jolla, California. Jules A. Hoffmann is Distinguished Class Research Director (Emeritus) at the Centre National de la Recherche Scientifique of the Institute of Molecular and Cellular Biology in Strasbourg. The second half of the Balzan Prize to Bruce Beutler and Jules Hoffmann encouraged joint efforts regarding the establishment of a model of inflammation in insects and mammals. The parallel study on inflammation in the absence of germs in the fruit fly (Drosophila) and in mice could lead to the future discovery of the causes by which, in humans, antibodies of endogenous origin are also activated in the absence of the pathogenic germs they are supposed to fight, thus producing autoimmune diseases. The two Prizewinners hired young researchers and supervised research work in their respective laboratories, which led to a comparative analysis of the IMD (fly) and TNFTLR (mouse) proinflammatory, signalling pathways in infection and development.

In La Jolla, Dr. Michael Berger screened peptidomimetic libraries for activators of TLR signalling. These studies, designed to identify molecules that could cause unconventional activation of TLR signalling, were performed as a collaboration with the laboratory of Professor Dale Boger at the Scripps Research Institute. Dr. Oren Milstein searched for immune activating functions of peptides that do not exist in the
mouse proteome. Dr. Philippe Krebs studied mutations that cause inflammatory disease and their attenuation by mutations that disrupt TLR signalling. Particularly significant was his demonstration that signalling via TLRs drives the lethal inflammatory disorder observed in mice with deficiency of the inositol polyphosphate 5 phosphatase, SHIP-1. Drs. Sungyong Won and Lei Sun worked jointly to develop a technique for cloning mice from fibroblasts, with the goal of screening these cells en masse for ex vivo phenotypes (including spontaneous inflammatory phenotypes) before regenerating mice from them and positionally cloning the causative mutations. Dr. Carrie Arnold initiated a screen for defects in the adaptive immune response, and succeeded in identifying eleven mutations to date. Dr. Amanda Blasius identified a key molecule for the responses of plasmacytoid dendritic cells to nucleic acids.

In Strasbourg, Dr. Hidehiro Fukuyama pursued a biochemical strategy to identify proteins that interact with components of the stands for immune-deficiency pathway (IMD, homologous to mammalian TNF) in Drosophila to limit inflammation caused by endogenous stimuli. Dr. Anne Kaukinen made a functional analysis of some of the proteins isolated by Dr. Fukuyama, and namely addressed their potential roles in activating antimicrobial peptide gene expression following stimulation by a bacterial pathogen. Exciting new data point to a significant role of the IMD signalling pathway in the defence of flies against several viral pathogens. The Balzan funds for Professor Hoffmann’s group concentrated on developing this new line of research. Professor Hoffmann gave a lecture entitled Gene Expression and Signalling in the Immune System at the sixth Cold Spring Harbor meeting in April 2012.

Publications


**Carbon Nanotubes: Structural Study and Applications in Biomedicine**

**Sumio Iijima**

2007 Balzan Prize for Nanoscience

**Balzan GPC Adviser:** Nicola Cabibbo†  
**Affiliated Institution:** Meijo University, Nagoya  
**Period:** 2008-2010  
**Website:** http://www.nec.co.jp/press/en/0711/2301.html

Sumio Iijima is a Professor at Meijo University in Nagoya, Director of the Research Center for Advanced Carbon Materials at the National Institute of Advanced Industrial Science and Technology (AIST) in Tsukuba, and Senior Research Fellow at NEC Central Research Laboratories.

Iijima’s Balzan research project was composed of two parts. The first was concerned with the characterization of atomic-level structures and physical properties of carbon nanotubes (CNTs) and their related nano-structures by means of *in situ* high-resolution electron microscopy (HR-TEM). The detail of the atomic structures of individual tubes has become increasingly important for understanding their physical properties and growth behaviors where the atomic defects are believed to play an important role. The second part dealt with the basic characterization of the CNTs necessary for biomedical applications, namely, drug delivery systems (DDS). CNTs have advantageous properties with respect to conventional DDS materials, such as liposomes and polymeric systems. They can be modified physically and chemically to meet optimum conditions for loading drugs in the inner spaces of CNTs and releasing them at specific sites and timing.

In the main, the program was conducted at Sumio Iijima’s affiliation, Meijo University, Nagoya, from 2008 to 2010. Some research was performed at the Research Center of Nanocarbon Materials at the National Institute for Advanced Industrial Science and Technology (AIST), Tsukuba, a governmental organization which is also directed by Professor Iijima.
An Experimental Investigation of the First Stages of the Formation of Cosmic Structures

Paolo de Bernardis and Andrew Lange†
2006 Balzan Prize for Observational Astronomy and Astrophysics

Balzan GPC Adviser: Per Olof Lindblad
Researchers: Martino Calvo, Luca Lamagna, Silvia Masi, Gianluca Polenta, Maria Salatino, Alessandro Schillaci
Affiliated Institutions: Università di Roma “La Sapienza”; California Institute of Technology (Caltech)
Period: 2006-2013

Paolo de Bernardis is Professor of Astrophysics and Observational Cosmology at the Università di Roma “La Sapienza”. Andrew Lange was Marvin L. Goldberger Professor of Physics at the California Institute of Technology.

This project, carried out under Professor Paolo de Bernardis, aimed to measure the effect of the first structures on the background CMB light, using an original approach, performing spectroscopic measurements of CMB anisotropy. From the experimental point of view, this strategy required building a differential spectrometer matched to a large aperture telescope to achieve the necessary angular resolution. Several publications resulted from the preparatory phases. The idea was tested experimentally with the flight of the OLIMPO balloon-borne telescope, which had been upgraded with an ambient-temperature differential spectrometer, inserted as a plug-in in the optical path between the telescope and the multi-band photometer, transforming the 4-band photometer in a low-resolution spectrometer.

A full phase-A study of an innovative satellite mission, called SAGACE, was carried out by the group at “La Sapienza” in the framework of the second project, and is described in a long document (ref. KISAG- RP-010), which has been submitted to the Italian Space Agency for evaluation and possible implementation as a national small mission.
Balzan funds were used to acquire hardware to design and complete the instruments, to support the dedicated work of postdoctoral students already trained on the BOOMERanG project, to support the collaboration with the Cardiff (Ade, Mauskopf) and Pasadena (Lange) groups for the development of subsystems, and the diffusion of cosmology results through the preparation of a book on observational cosmology. Three Balzan postdoctoral fellowships at “La Sapienza” focusing on the data analysis of the BOOMERanG and Planck experiments and on the SAGACE study were assigned. This work resulted in a large number of papers. Balzan funds also provided support for: the hardware of the large throughput Martin-Puplett interferometer built in the group (a prototype for the missions described above, and the subject of Alessandro Schillaci’s PhD thesis); the development of innovative mm-wave detectors, the microwave kinetic inductance detectors (paper submitted for publication) and the cold electron bolometers; cooperation with the Caltech group on CMB polarization measurements, with the development of a parallel study carried out in Europe for a space mission devoted to CMB polarization.

Two proposals have been submitted to European Space Agency (ESA), with Paolo de Bernardis serving as the PI and with the collaboration of the US teams in addition to the European ones. His group is also actively studying the impact of systematic effects on the scientific exploitation of these measurements. An even more ambitious mission, PRISM, was studied and proposed to the ESA in 2013 in the framework of the call for science with large missions.

Publications


An Experimental Investigation of CMB Polarization

Paolo de Bernardis and Andrew Lange†

2006 Balzan Prize for Observational Astronomy and Astrophysics

**Balzan GPC Adviser:** Per Olof Lindblad

**Project Directors and Researchers:** Tom Soifer, James Bock (project managers in lieu of Andrew Lange); Randol Aikin, John Kovac, Roger O’Brient

**Affiliated Institutions:** Università di Roma “La Sapienza”; California Institute of Technology (Caltech)

**Period:** 2006-2013

Paolo de Bernardis is Professor of Astrophysics and Observational Cosmology at the Università di Roma “La Sapienza”. Andrew Lange was former Marvin L. Goldberger Professor of Physics at the California Institute of Technology.

Funding for Professor Andrew Lange’s prize investigation was used to support an emerging generation of young experimental cosmologists and an ambitious program of new ground-based and balloon-borne CMB experiments. Funds from the Balzan Prize were thus applied to build upon the results of BOOMERanG, the basis of the 2006 Balzan Prize, to probe the physical process of inflation via CMB polarization measurements. Two experiments were initiated to search for a handed ‘B-mode’ polarization pattern using new technology millimeter-wave focal plane detector arrays.

The BICEP2 (Background Imaging of Cosmic Extragalactic Polarization) experiment is a degree-scale polarimeter that carried out science observations from the South Pole. The receiver is in many ways similar to its predecessor experiment BICEP, but differs in that the focal plane has been greatly enhanced, going from individual detectors, similar to those used in the Planck satellite, to entirely micro-fabricated arrays with superconducting sensors and readouts. Balzan funds enabled them to initiate BICEP2, and a more powerful successor experiment named the Keck Polarimeter Array, with support from the National Science Foundation and the W.M. Keck Foundation.
The BICEP2 instrument completed its expected three years of scientific observations from the South Pole and was decommissioned in December 2012. BICEP2 successfully led to the implementation of the Keck Polarimeter Array with five receivers of equal sensitivity that have now been fielded at the South Pole station and are currently observing. The collaboration is putting forth a comprehensive effort to analyze the BICEP2/Keck data set. Because BICEP2/Keck comprises the most sensitive probe of inflationary B-mode polarization to date, extreme care must be taken to account for all possible sources of systematic error and foreground contamination. Furthermore, with multiple receivers observing over many years, the data set allows for numerous checks on systematic errors that must be carefully accounted. In the meantime, several intermediate papers have been published describing the instrument performance and the state of the detector technology that enable these measurements.

In parallel, the research group has been developing SPIDER, a powerful balloon experiment that uses 6 new-technology focal plane arrays similar to the focal plane developed for BICEP2, but with even higher sensitivity due to the lower atmospheric emission available on a high-altitude balloon. SPIDER observes CMB polarization in multiple frequency bands, a key to discriminating cosmological polarization from polarized Galactic emission. SPIDER was deployed to Antarctica for its first flight in December 2013, and was launched in 2015.

Publications

For a complete list of related publications see the Balzan Foundation website at http://www.balzan.org/en/prizewinners/paolo-de-bernardis-e-andrew-lange/research-project-bernardis-lange.

O’Brient R et al. 2012. Antenna-coupled TES bolometers for the Keck Array, Spider, and Polar-1. SPIE 8452E, 1GO.
Kernasovskiy S et al. 2012. Optimization and sensitivity of the Keck Array. SPIE 8452E, 1BK.
Vieregg AG et al. 2012. Optical Characterization of the Keck Array Polarimeter at the South Pole. SPIE 8452E, 26V.
Ogburn IV RW et al. 2012. BICEP2 and Keck Array Operational Overview and Status of Observations. SPIE 8452E, 1AO.
Live Imaging of Cellular Differentiation in Shoot Apical Meristems and in Cellulose Synthesis

Elliot Meyerowitz and Christopher R. Somerville
2006 Balzan Prize for Plant Molecular Genetics

Balzan GPC Adviser: Marc van Montagu
Researchers: Marcus Heisler, Wuxing Li, Paul Tarr (under Prof. Meyerowitz); Adisorn Chaibang, Seth DeBolt, Brad Dotson, Ying Gu, Patricia Bubner (under Prof. Somerville)
Affiliated Institutions: California Institute of Technology (Caltech); Carnegie Institution of Science; University of California, Berkeley
Period: 2006-2009

Elliot Meyerowitz is George W. Beadle Professor of Biology and Investigator of the Howard Hughes Medical Institute at the California Institute of Technology’s Division of Biology. Christopher R. Somerville is Emeritus Professor of Energy Biosciences at the University of California, Berkeley.

Meyerowitz and Somerville developed a research project employing live imaging of dynamic plant processes followed by computational image processing to study two key processes: cellular differentiation in shoot apical meristems and cellulose synthesis. Elliot Meyerowitz initially involved Marcus Heisler, a pioneer of the new live imaging method, who worked on the live imaging of growing shoot apical meristems and computational modeling of cell behaviour and cell-cell communication during meristem growth. After Dr. Heisler left Caltech to establish his own laboratory at the European Molecular Biology Laboratory in Heidelberg, the project involved two additional postdoctoral fellows, Dr. Wuxing Li and Dr. Paul Tarr, who carried the shoot apical meristem work forward by investigating the involvement of the plant hormones auxin and cytokinin in the control of cell expansion, division and gene expression, and therefore, the contribution of these growth hormones to the interaction of physical and chemical signaling that controls meristem cell behaviour.
The work done in this part of the project led to a new National Institutes of Health grant on the action of hormones in the shoot apical meristem, which allowed the work to continue.

Professor Somerville involved three postdoctorate students in studies concerning the molecular mechanisms associated with the synthesis or depolymerization of cellulose. The research program in the Somerville laboratory focused on understanding several aspects of the control of cellulose synthesis or depolymerization. In 2013, postdoctoral fellow Patricia Bubner joined the Somerville groups following doctoral studies in Graz, Austria, and studied the role of glycosylation on enzyme activity by using genetic methods to modify the amount and location of glycans on proteins. Former postdoctoral fellow Ying Gu studied the role of the microtubule cytoskeleton in orienting the deposition of cellulose microfibrils by analyzing mutants in which the deposition is altered. Balzan funds were also used by Professor Somerville to support then postdoctoral fellow Seth DeBolt, who investigated the involvement of sterol glycosides in cellulose synthesis.

In December 2007, Professor Somerville moved his laboratory from Carnegie to the University of California, Berkeley. The project was inactive until the summer of 2009 due to administrative delays associated with moving the funds from one institution to another. Somerville’s Balzan funds have been used to partially support two graduate students, Adisorn Chaibang and Brad Dotson. Chaibang examined the role of two laccase enzymes in lignin biosynthesis and Dotson explored the function of a family of proteins of unknown function that appear to play important roles in cell wall biosynthesis.

**Publications**


New Directions in Mineral Physics: 
Multidisciplinary High Pressure Science

Russell Hemley and Ho-kwang Mao
2005 Balzan Prize for Mineral Physics

Balzan GPC Adviser: Enric Banda
Researchers: Pierre Beck, Lin Wang, Charles Qiaoshi Zeng, Claire Barkett, Daniel Cohen, Maura James (post-doctoral fellows and doctoral students); Andrew Kung, Alexander Levedahl, Manchali Madurri, Jaqueline Rivera, Ari Benjamin, Kevin Hernandez, Tao Liu, Louis Loubeyre, Juliana Mesa, Viktor Rozsa, Brandon Wilfong, Keenan Brownsberger, Anne Davis, Reed Mershon (high school students)
Affiliated Institution: Carnegie Institution of Washington, Geophysical Laboratory
Period: 2006-2016

Russell Hemley is Research Professor at George Washington University and Director of the Carnegie/DOE Alliance Center.

With the second half of their Balzan Prize, Hemley and Mao implemented a project focused on bringing bright young people from diverse backgrounds into the multidisciplinary field of High Pressure Science. Research in this new field is expected to bring about breakthroughs in applications to mineralogy, geophysics, geochemistry and bioscience, as well as specific areas such as hydrogen storage, superhard materials and superconductivity. The project was focused on training and its goal was the exploration of the new high-pressure dimension in multidisciplinary physical sciences. The fellowships encouraged the development, design, and fabrication of new instrumentation that exploited the CVD diamond technology developed by Professors Hemley and Mao. Publications and dissemination of results have also been financed.

The following post-doctoral fellows and doctoral students received Balzan support: Pierre Beck (Balzan Prize post-doctoral associate from 2006-2007); development of time-resolved (i.e., dynamic) high pressure-temperature phenomena with diamond
anvil cells; Lin Wang (Balzan Prize post-doctoral associate): development of a new method for the synthesis of controlled shape C60 fullerene nanorods, development of a new technique to integrate the high-pressure diamond anvil cell with the high brilliance x-ray beam focused down to 50-200 nm size at the Advanced Photon Source, and work at the High Pressure Synergetic Consortium (HPSynC) at the Advanced Photon Source (APS), Argonne National Laboratory (ANL) in 2008; Charles Qiaoshi Zeng (Balzan Prize support, 2008): x-ray diffraction experiments at the APS synchrotron facility and discovery of a new type of alloy and a new phenomenon in metallic glass that have far-reaching impact in fundamental physics as well as materials applications.

The following high school students also received Balzan Award support: Andrew Kung: to develop a high-pressure project studying the pressure, temperature and temporal effects on a newly discovered O₂-H₂ alloy; Daniel Cohen: to study novel electronic phenomena in diamond, in particular, to produce a new material with metallic electrical conductivity, and possibly superconductivity; Alexander Levedahl: to investigate the high pressure-temperature behavior of hydrogen-containing ice materials known as hydrogen clathrates; Claire Barkett: follow-up on the earlier work of Jaqueline Rivera by synthesizing several solid solutions in the Fe₂O₃-Al₂O₃ system very close to the 1:1 FeAlO₃ composition; Maura James: to investigate high pressure clathrate formation in the H₂O-NH₃-H₂ ternary system with Stephen Gramsch and Maddury Somayazulu in an exploratory project to work out special techniques for sample loading and mapping the composition of the mixture inside the diamond anvil cell; Manchali Madurri: a study of H₂-crown ether complexes at high pressure that led to his being named a semifinalist in both the Intel and Siemens national science fair competitions; Jaqueline Rivera: development of a new room-temperature, solution-based synthesis method for solid solutions in the Fe₂O₃-Al₂O₃ solid solution system; Ari Benjamin: Equation of state of the fluorinated copolymer Kel-F 800 to near megabar pressures; Kevin Hernandez: Raman spectroscopy studies of e carbon dioxide-water system at high pressure; Tao Liu: Optical emission spectroscopy studies of MPCVD diamond growth; Louis Loubeye: heterogeneity in the dynamics of methanol under high pressure; Juliana Mesa: Geochemistry of Fe stable isotopes – from planets to minerals; Maimon Rose: Investigating the electrocaloric piezoelectric effects in LiNbO₃ and PMN-PT using MD simulations; Viktor Rozsa: Pressure studies of hydrogen-loaded hydroquinone clathrate; Nichole Valdez: High pressure synthesis of Fe₂SiO₅; Kevin Hernandez (second internship): Reactivity at high pressure and temperature; Olivia Reyes-Becerra: Synthesis of single-crystal Na₄Si₂₄ clathrate; Brandon Wilfong: In-situ
Raman spectroscopic investigation of relaxor multiferroic Pb(Fe$_{0.5}$Nb$_{0.5}$)O$_3$ under high pressure and temperature conditions; Keenan Brownsberger: Synthesis of palladium hydrides at extreme conditions; Anne Davis: Phase transitions in silicon quantum dots for solar energy conversion; Reed Mershon: The role of oxygen fugacity in elemental fractionation between basaltic and sulfidic liquids.

Publications

The most recent publications are listed below. For a complete list of publications, see http://www.balzan.org/en/prizewinners/russell-j--hemley-and-ho-kwang-mao/research-project-russel-mao and previous editions of the Overview.


Evolution in Small Populations

Peter and Rosemary Grant
2005 Balzan Prize for Population Biology

Balzan GPC Adviser: John Krebs
Project Directors and Researchers: Céline Clabaut, Jennifer Gee, Paquita Hoeck, Margarita Ramos-Womack (researchers); David Stern, Lukas Keller, Arkhat Abzhanov (supervisors)
Affiliated Institutions: Department of Ecology and Evolutionary Biology, Princeton University; Zoologisches Museum, Universität Zürich
Period: 2005-2009

Peter Grant is ‘Class of 1877’ Professor of Zoology and Professor of Ecology and Evolutionary Biology (Emeritus) at Princeton University. Rosemary Grant is Emeritus Professor and Senior Research Biologist in Ecology and Evolutionary Biology at Princeton University. With their second half of the Balzan Prize, the Grants financed four lines of research concerned with mate choice and speciation in species of Drosophila; inbreeding and disease in small populations of Galápagos mockingbirds; the molecular basis of species-specific craniofacial patterning in birds; and beak development in an unusual Darwin’s finch species, the warbler finch.

For the first line, Margarita Ramos addressed the genetic bases and adaptive significance of morphological evolution in Drosophila by focusing on the pigmentation differences between Drosophila yakuba and Drosophila santomea. She developed and applied a technique for identifying the individual genes responsible for abdominal pigment differences between species. The laboratory research was supervised by Dr. David Stern at Princeton University.

As for the second, Paquita Hoeck tested the hypothesis that reduced genetic variation due to inbreeding lowers the ability of small and inbred populations to respond to infectious diseases. For this purpose, four allopatric species of mockingbirds on the Galápagos Islands were studied, and the genetic variability in populations of different size was determined by using neutral genetic markers (microsatellites). The positive
results are of direct importance to the conservation management of the endangered Floreana mockingbird species. This research was supervised by Dr. Lukas Keller at Universität Zürich.

The third line of research was taken up by then postdoctoral fellow Céline Clabaut, who studied the molecular basis of craniofacial patterning in Darwin’s medium ground finches of the Galápagos Islands under the direction of Dr. Arkhat Abzhanov at Harvard University. The main aim of Céline Clabaut’s Balzan Foundation fellowship was to study the genetic basis of species-specific Bmp4 expression. Together, they were able to (1) show that the Bmp4 coding sequence in Darwin’s Finches is too conserved to be responsible for the species specific expression of Bmp4; (2) start the analysis of cis-regulatory changes; and (3) develop two powerful approaches to identify the enhancers: first, long-range detection of the enhancer activity with transgenic hybrid mice, and second, a more precise search using a lentivirus approach.

Finally, for the fourth line, Jennifer Gee (postdoctoral fellow) worked in the same lab as Clabaut, applying similar techniques to the investigation of differences between the warbler finch (*Certhidea*) and the ground finch (*Geospiza*).

A two-day Balzan Symposium *Population Biology and Evolution*, dedicated to the overall results of the project was held in September 2008 at Princeton University.

**Publications**


The Pierre Deligne Contest

Pierre Deligne
2004 Balzan Prize for Mathematics

Balzan GPC Adviser: Jacques Tits
Project Directors: Pierre Deligne, Victor Vassiliev (Co-Chairmen); Boris Feigin, Yuliy Ilyashenko (Vice-Chairmen); Yurii Burman (scientific secretary)
Affiliated Institution: Independent University Moscow
Period: 2005-2009
Website: http://www.mccme.ru/pdc/rules_e.html

Pierre Deligne is a Professor at the Institute for Advanced Study in Princeton NJ. He used the second half of his Balzan Prize to sponsor a competition for young mathematicians of Russia, Ukraine and Belarus. The Pierre Deligne Contest had the aim of helping young mathematicians to stay in their home countries to carry out scientific research. The contest winner was awarded a three-year research grant. Any person thirty-five or under who had a PhD in mathematics and lived in Russia, Ukraine or Belarus was eligible for the competition. Competitors had to provide a research statement, and grant recipients had to present an annual report with a summary of that year’s achievements and their plans for the following year. All papers submitted by grant recipients during the grant period were to mention partial funding from Pierre Deligne’s 2004 Balzan Prize in Mathematics.

Balzan funds were used to finance seventeen three-year research grants: five in December 2005; five in 2006; five in 2007; two in 2008. Since the grants were for three years, those awarded in 2008 continued until the end of 2011. Even though the funds were exhausted after the 2008 round, Pierre Deligne found the resources to prolong the awarding of grants through 2009.

Afterwards, the competition was continued by the Dynasty Foundation (Russia), until the demise of this Foundation in 2015.
Publications

The project resulted in over seventy publications. For a complete list see the Balzan website: http://www.balzan.org/it/premiati/pierre-deligne/progetto-di-ricerca-francese-deligne.
Michael Marmot
2004 Balzan Prize for Epidemiology

Balzan GPC Adviser: Werner Stauffacher
Researchers: Rama Baru, Sergio Luiz Bassanesi, Eleonor Fransson, Alex Gaina, Philippa Howden-Chapman, Krisztina László, Gyöngyvér Salavecz, Nelly Salgado, Kavita Sivaramakrishnan, Adrienne Stauder, Maki Umeda
Affiliated Institution: University College London
Period: 2004-2018

Michael Marmot is Director of the Institute of Health Equity, Director of the International Institute for Society and Health and MRC Research Professor of Epidemiology and Public Health at University College London, as well as Adjunct Professor in the Department of Society, Human Development and Health at Harvard University. As initiator of the era of social epidemiology and a pioneer in the development of a wholly new concept of preventive medicine, Professor Marmot is using half of his Balzan Prize for a new programme of international fellowships at University College London’s International Institute for Society and Health. The Institute was founded in 2007 to bring together strong individual research programmes on the determinants of health and well-being in society. Multidisciplinary and international in scope, the Institute is unequalled in offering opportunities for research and interdisciplinary research experience for young scholars. The international fellowships have two key objectives in Michael Marmot’s field of scientific interest: research experience in the social determinants of health and well-being, and the fostering of international networks of research and policy development. The aim is to develop the next cadre of researchers for the future and to benefit from the clear advantages that international collaboration brings.

Visiting Fellows include: Dr. Kavita Sivaramakrishnan (Public Health Foundation of India) and Dr. Rama Baru (Jawaharlal Nehru University, Delhi, India), who have published and given papers on the social determinants of health; Dr. Krisztina László (Semmelweis Egyetem, Budapest, Hungary), who has published and given a
paper on job insecurity and health in sixteen European countries; Dr. Nelly Salgado (Instituto Nacional de Salud Publica, Cuernavaca, Mexico), who has developed a short course on the Social Determinants of Health (with Tarani Chandola and Roberto De Vogli) for her Institute; and Dr. Alex Gaina (University of Toyama, Japan), who has submitted several papers and given presentations on the social determinants of child obesity and development using data from the Toyama Birth Cohort Study, and published work on maternal employment and child obesity in Japan; Dr. Sergio Luiz Bassanesi (Universidade Federal do Rio Grande do Sul - UFRGS, Brazil) who was a coapplicant on a successful application to the Economic and Social Research Council on spatial and social inequalities in health in Brazil and India; Dr. Adrienne Stauder (Semmelweis Egyetem, Budapest, Hungary), whose residency explored opportunities for increased data analysis of extant Central and Eastern European data on inequalities, the potential to develop collaborative database analysis and collaborative data collection, and the opportunities for new research questions on protective factors; Dr. Eleonor Fransson (Högskolan i Jönköping, Sweden), who worked on Whitehall II data, and more specifically, on the relationship between BMI/WHR and inflammatory markers, thereby developing her skills and increasing her international contacts; Ms. Gyöngyvér Salavecz (Semmelweis Egyetem, Budapest, Hungary), who worked on the cross cultural consistency of associations between positive effect and cortisol and heart rate variability, did training, increased collaboration between UCL, Princeton and Semmelweis Egyetem, and published a paper on work stress and poor health in Western European and in post-communist countries; Professor Philippa Howden-Chapman (University of Otago, Wellington, New Zealand), who conducted discussions of housing as a neglected but crucial social determinant of healthy ageing and possibilities of housing conditions data collection in the ageing cohort studies at UCL; Dr. Maki Umeda (Department of Mental Health, University of Tokyo, Japan), who examined gender differences in the occupational gradient in mental health outcomes in Japan, together with the role of job control and effort-reward imbalance in explaining these gender differences, and took data from the Whitehall II study back to Japan to continue the project’s collaboration and comparative work.

An end date for the project is currently set for 31/12/2018, with a review in early December.
Publications


Cosmic Formation and the Evolution of Galaxies and Massive Black Holes

Reinhard Genzel
2003 Balzan Prize for Infrared Astronomy

Balzan GPC Adviser: Per Olof Lindblad  
Researchers: Avishai Dekel, Christopher McKee, Eliot Quataert, Amiel Sternberg  
Graduate Students: Natascha Förster-Schreiber, Kristen Shapiro  
Affiliated Institutions: Max-Planck-Institut für extraterrestrische Physik (MPE); University of California, Berkeley  
Period: 2003-2010

Reinhard Genzel is Director of the Max-Planck-Institut für extraterrestrische Physik in Garching, Germany. Genzel’s projects supported by Balzan funds aimed to explore how the connection between the evolution of central black holes and galaxies came about, what physical processes were involved and when the local black hole/galaxy mass relationship was established. They also investigated how massive galaxies like the Milky Way were formed and what the role of galaxy collisions and mergers in the assembly of galaxies was, including the mechanisms leading to the fuelling of the most luminous quasars. This was done by using instruments his team had developed for ground-based, airborne and space telescopes. In particular, the second part of the Balzan Prize was used to strengthen the interaction between the experimental/observational group at the Max-Planck-Institut für extraterrestrische Physik (MPE) and several theoretical and interpretative research groups, in particular, the University of California, Berkeley (USA) and the University of Tel Aviv (Israel), by supporting scientific exchange and providing short-term support for collaborative research, specifically carried out by young scientists.

One highlight of the research supported in part by Balzan funds was a new major effort using the MPE-developed SINFONI near-infrared integral field spectrometer (at the ESO-VLT) for the first-ever survey of the kinematics of massive star forming galaxies at redshift ~2, approximately 3 billion years after the Big Bang. This
ground-breaking survey, called SINS, was highly successful and provided key insights into the evolution of stars forming galaxies at that epoch. It became clear that large disks comparable in mass to the modern Milky Way already existed at that time, but with substantially different physical properties. These observations, in conjunction with theoretical work by other groups in Israel and California, led to a significant shift in thought on how massive galaxies formed and evolved during this epoch. The SINFONI observations suggest that, rather than major mergers, rapid and continuous accretion of gas from the dark matter halos (the so-called ‘cold flows’) may have dominated the mass assembly of massive galaxies. This very ambitious, unique survey led to the publication of a number of papers, including a milestone article in *Nature* in 2006.

The Balzan funds helped to provide seed funding for the support of young researchers at MPE, and to stimulate international collaboration. Dr. Natascha Förster-Schreiber, hired at MPE (in part by Balzan funds), became the leading scientist of the SINS survey, and her outstanding work led to the prestigious Minerva MPG Fellowship (an independent research position funding a small research group for five years) in 2007. In Tel Aviv, a research group led by Professor Amiel Sternberg also carried out active work on this project. The seed funding by the Balzan Foundation led to the award of prestigious Deutsch-Israelische Projektkooperation (DIP) funding by the Deutsche Forschungsgemeinschaft (DFG). The DIP funding allowed MPE-Israel collaboration to include the theoretical group of Professor Avishai Dekel at Hebrew University, Jerusalem. Balzan funding also supported scientific research and international exchange in galaxy formation/evolution at the University of California, Berkeley, mainly with Professors Christopher McKee and Eliot Quataert, while also including graduate student Kristen Shapiro, who spent part of her time at Berkeley and part at MPE.

**Publications**


Evolution of Gene Regulation and Regulatory Modules in Yeast

Wen-Hsiung Li

2003 Balzan Prize for Genetics and Evolution

Balzan GPC Adviser: John Krebs
Affiliated Institution: The University of Chicago
Period: 2003-2011

Wen-Hsiung Li is James Watson Professor in the Department of Ecology and Evolution at the University of Chicago.

The development and the physiology of an organism are controlled by genes. For this purpose a gene must be turned on or off at the right time and under the right conditions, and when it is on, the level of its expression must be appropriate. Otherwise, the organism can become sick or even die. The turn-on and -off and the level of expression of a gene are called gene regulation. Hence, evolutionary change in gene regulation, or regulatory evolution, is important for the morphological or physiological differences between organisms. Wen-Hsiung Li chose budding yeast as the model organism to study gene regulation because its genetics and molecular biology are well understood and it is experimentally much easier to manipulate than higher organisms.

The purpose of Wen-Hsiung Li’s project was to study how the regulation of yeast genes has evolved over time. Instead of looking at one gene at a time, the aim was to look at a group of genes (or regulatory module) subject to the same or similar regulation at the same time.

Publications


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Genomic Analysis of Eye Development

Walter Gehring†
2002 Balzan Prize for Developmental Biology

Balzan GPC Adviser: Nicole Le Douarin
Researchers: Lydia Michaut, Sandra Cottet
Affiliated Institution: Biozentrum, Universität Basel
Period: 2002-2008

Walter Gehring was Emeritus Professor at the Biozentrum of the Universität Basel. The second half of his Balzan Prize was used for postdoctoral support for Lydia Michaut, now an expert in the genomic analysis of DNA chips (microarrays), to study eye development and eye diseases.

Insects and vertebrates have different types of eye, but the same genes are involved in the early stages of development. This project used a special model system based on the fact that there is only one gene, PAX-6, at the outset of eye development, and that in some cases insects can form eyes on extremities. A total of 154,000 individual measurements of genetic activities was conducted. By introducing and activating PAX-6 in certain cells of the fly, Professor Gehring’s team was able to initiate the development of eyes in places where they would not normally be expected to grow, which is an ideal system for identifying the genes that only occur in relation to eye development. Comparing the differences in gene activity patterns between normal fly legs and those with PAX-6 induced eyes reveals which genes are involved in eye development. To understand how the activity of identical genes can lead to the development of different eye types, it is essential to know how the relevant genes behave.

Michaut’s first round of genomic analysis of Drosophila eye showed that the number of genes activated in the eye increases dramatically as an insect develops, but that the functions of the activated genes vary considerably (Michaut et al., 2003). At a later stage, in collaboration with the Institut de Recherche en Ophtalmologie in Sion, she then analyzed the gene response in the retina of a mouse model of Leber’s congenital...
amaurosis, an early onset form of retinitis pigmentosa that results in blindness or severely impaired vision in children. Mutations in seven different genes, one of which is called RPE 65, have been associated with this disease. Together with Sandra Cottet, Michaut studied mice mutants lacking RPE 65, using high density microarrays to compare gene expression in the retina of normal and RPE 65-deficient mice, and identified the secondary defects which lead to the death of the photoreceptor cells in the retina. These gene products can serve as potential targets to screen for protective drugs or compounds which limit cell death in the retina (Cottet et al., 2006).

To allow general and easy access of these expression data in mouse and fly eyes, Lydia Michaut set up a searchable database where Drosophila and mouse gene expression profiles in the eye can be easily queried and visualized (Eyebase).

Publications


**A Geodynamic Research Team in Aix-en-Provence**

**Xavier Le Pichon**

**2002 Balzan Prize for Geology**

**Balzan GPC Advisers:** Eugen Seibold, Enric Banda  
**Researchers:** Louis Andréani, Nicolas Flotté, Youri Hamon, Laurent Husson, Charlotte Le Roy, Jing-Yi Lin, Nicolas Loget  
**Affiliated Institution:** Collège de France  
**Period:** 2002-2008

Xavier Le Pichon is Honorary Professor at the Collège de France. Le Pichon’s research team moved to the Université Paul Cézanne, Aix-Marseille III, to establish a new branch of the Collège de France there in 2003, and the second part of the Balzan Prize was used in part to finance new scientific equipment. In addition, it was used to complement post-doctoral salaries and to finance geological field work.

Two projects featured young researchers funded by the Balzan Prize. The first concerned the tectonics of the Western Gulf of Mexico and was the result of cooperation with oil companies over four years. Young researchers Flotté, Husson, Le Roy and Andréani published the results of their research in a special issue of the *Bulletin de la Société Géologique de France*, co-published with the American Association of Petroleum Geology (2008). The main result of the project is to have established that this continental margin, which was thought to be inactive since the Jurassic period, has instead been affected by active tectonics in the last 30 million years.

The second project concerned the geodynamics of the Provence basin, and results were also published as a special issue of the *Bulletin de la Société Géologique de France*. Young researchers Flotté, Husson, Hamon, Lin, Andréani and Loget established that the so-called alpine tectonics is the result of en masse gravity gliding of the thick Triassic salt layer, which occurred when the Alps were uplifted during the Miocene epoch.
Publications


Jean-Pierre Changeux

2001 Balzan Prize for Cognitive Neurosciences

Jean-Pierre Changeux is Professor Emeritus at the Institut Pasteur and Honorary Professor of the Collège de France. In his research, Changeux was mainly concerned with the study of the correlation of cognitive functions and the molecular aspects of cerebral activity. His laboratory was the first to activate the genes of neuronal nicotinic receptors and to study the consequences they might have on human behaviour. Jean-Pierre Changeux used the second half of his Balzan Prize to continue and diversify this research at the Récepteurs et Cognition unit of the Institut Pasteur. General overviews of this research are contained in the publications listed below. In the Nature Reviews Neuroscience article, Changeux reviews studies in transgenic mice that started to reveal which nicotine receptor subunits mediate the effects of nicotine on behavior, cognition and addiction, thus forming therapeutic targets for nicotine addiction.

Main Publications

Research on the Mechanisms Governing the Climate System

Claude Lorius
2001 Balzan Prize for Climatology

Balzan GPC Adviser: Enric Banda
Researchers: Project 1) Jean Jouzel, Senior Researcher; Project 2) Joel Savarino, Senior Researcher; Project 3) Jean Robert Petit; Project 4) Dominique Raynaud, Senior Researcher
Affiliated Institution: CNRS, Grenoble
Period: 2001-2008

Claude Lorius is Director Emeritus of Research at the Centre National de la Recherche Scientifique (CNRS) in Grenoble. With the second half of his prize, Lorius financed four projects involving research on the mechanism governing the climate system: 1) Antarctic Palaeo-temperatures and Antarctic climate mechanisms: cross-use of water isotopes (_D, _18O) and air isotopes (_15N, _40Ar); 2) Climate and atmospheric chemistry: Constraints due to isotopes of oxygen and sulphur; 3) Study of impurities in the ice: aerosols and organic content; 4) Record of atmospheric CO2 during Stage 11, 400,000 years ago. Resulting publications contributed significantly to the awareness of the importance of the impact of current global warming on the degradation of the earth’s atmosphere.

Publications

The projects resulted in approximately fifty articles in scientific journals by researchers Jean Jouzel, Joel Savarino, Jean Robert Petit and Dominique Raynaud. A complete listing can be downloaded from the Balzan site: http://www.balzan.org/en/prizewinners/claudelorius/research-project-french-lorius.