



פרופ' אורלי שנקר
מנהלת

מרכז סידני מ. אדלשטיין
להיסטוריה ופילוסופיה של
המדע, הטכנולוגיה
והרפואה

קמפוס אדמונד ספרא
ירושלים 91904
טלפון: 02-6585652
פקס: 02-5880148

התכנית בהיסטוריה
ופילוסופיה של המדע

קמפוס הר הצופים
ירושלים 91905
טלפון: 025883759
פקס: 02-5883572

Thales Research Project:

Aspects and Prospects of Realism in the
Philosophy of Science and Mathematics

(APRePoSMa)

Review and Assessment Report

Prof. Orly Shenker
Director

Sidney M. Edelstein
Center for the History
and Philosophy of
Science, Technology
and Medicine

Edmund Safra
Campus
Jerusalem 91904
Israel
Tel.: 972-2-6585652
Fax: 972-2-5883572

Program in the History
and Philosophy of
Science

Mount Scopus
Jerusalem 91904
Tel.: 02-5883759
Fax.: 972-2-5883572

Email:
orly.shenker@
mail.huji.ac.il

Website:
<http://pluto.huji.ac.il/~orlyshenker/>

By

Orly Shenker

Professor of Philosophy

The Hebrew University of Jerusalem

November 2015

Signature

Review and Assessment Report

Of Thales Research Project: Aspects and Prospects of Realism in the Philosophy of Science and Mathematics (APRePoSMa)

by Orly Shenker
The Hebrew University of Jerusalem
November 2015

I Introduction

This report reviews and assesses a research project that examines the aspects and prospects of realism in philosophy of science and mathematics (acronym APRePoSMa). The project was funded by the Thales programme, and received the sum of 457,800 Euros, during the period of 2012-2015.¹

In this review I shall describe broadly the topic of the research and its significance for the advancement of knowledge; present the aims of the research; and describe and assess the achievement of these aims, focusing especially on the goals of the Thales programme as well as those set by the planners of the project. The review is based on reading publications and other materials produced by the members of the project team, and on discussions with these members carried out as part of the assessment process.

The central aim of the Thales programme is *“Reinforcement of the interdisciplinary and/or inter-institutional research and innovation with the possibility of attracting high standard researchers from abroad through the implementation of basic and applied excellence research”*². The APRePoSMa project fully achieved these aims and its accomplishments are excellent.

My overall conclusions (details are below) with respect to the results of the project are these. First of all, the project’s intellectual achievements are of very high quality by international criteria. Second, the project has led to spreading the fruit of Greek research in the international community of philosophers of science and mathematics, thus contributing to the status and visibility of the Greek academia in the world. Third, the project has significant educational benefits in that it has exposed post doctoral and graduate students to the highest standards of academic work and encouraged them to fulfill these standards. Fourth, the project succeeded in creating and maintaining an active group of scholars, at all levels and from several institutes. These achievements are likely to produce fruit also after the project comes to its formal end, the APRePoSMa project has made Greece a significant international center for the study of philosophy of science and in particular Scientific Realism.

¹ Link to the Thales website: <http://excellence.minedu.gov.gr/thales/en/thalesprojects/375791>. The sum of money is the final sum that was allocated to the project, after several changes some of which were due to the special situation in Greece.

² From the Thales website.

II Background: the topic of the research project and its importance

Since antiquity philosophers asked themselves this: our experience seems to tell us that there is a world around us, and we feel that we see and hear things in this external world. But is this impression true? Is there really something out there, or are we only dreaming or imagining? *Realism* is the idea that indeed there is a world out there, and that we are able to know some things about it. *Scientific Realism* adds that the best way to learn about the world is the scientific way, and that consequently what the scientific theories tell us about the world is (at least partly) true.

Is Scientific Realism correct? Is science the best way to know about the world? This question is important, and here are two reasons why it is important. One is that Scientific Realism is a good explanation for the success of science. If the scientific theories were not true, then it would be hard to explain why science is so successful; this success would seem to be a miracle. The belief that there are no miracles supports the correctness of Scientific Realism. Another reason why many think that the idea of Scientific Realism is important is that it gives us stronger *motivation* to carry out scientific research. An important motivation for research is the desire to learn about the world in which we live, and – based on this knowledge – to predict phenomena and develop technologies. If science were not the best way to tell us the truth about the world we might have had less motivation for carrying out research, and this is an undesirable result. For these reasons, the question of whether Scientific Realism is correct is important.

Despite the importance of the idea of Scientific Realism it is not trivial that it is correct. The philosophical tradition as well as contemporary philosophy offer arguments against Scientific Realism, and the debate is still open. Progress is constantly made in understanding Scientific Realism, and the APRePoSMa research project aims to contribute to this important endeavor. The aim of the project is to address the central topics of the debate, putting forward a broad and general framework within which the scientific realism debate can be conducted. Since this subject is so wide and includes so many sub-topics, a large scale coordinated group work provides a unique opportunity to make significant progress in it. Such a project is particularly apt in a community that has a good number of scholars with international reputation and expertise in this field that are able to carry out such a project, and the community of philosophers and historians of science and mathematics in Greece is such a group.

III Assessment of the APRePoSMa research project

i The deliverables in numbers

The APRePoSMa project is a philosophical project, and the hope in planning it was to contribute to the advancement of philosophical knowledge. How can the advancement of philosophical knowledge be measured? How can funding it be assessed? Evaluation has varied definitions and various methods. The criteria that are used here should (a) focus on the important question of what was accomplished in the project, and (b) assure that the evaluation is carried out objectively and sources of bias are eliminated. In this section I shall focus on (b), and address (a) later.

The planners of the project were aware of the need to have clear measureable criteria for evaluation, so that the success of the project will be measured objectively and without bias.

For this reason they described the expected outputs of the projects in terms that included observable and measureable deliverables. I shall describe these deliverable and explain why they are good indicators of the project's success.

The description of the *expected* output was specified in numbers. The plan was that participants in the project will produce 25 papers in learned journals and edited collections; 3 doctoral dissertations; 2 books; and 8 workshops. These numbers ensure that the products of the project indeed satisfy international standards of quality, for the following reasons. The papers and books are judged by internationally acknowledged experts before they are accepted for publications; doctoral dissertations are assessed by members of the international professional community of scholars in the field; and these scholars participate in workshops that they know to be of high quality. And so the numbers indicate the involvement of the international community of experts in constantly assessing the products of the project and ensuring their quality. They are, therefore, good criteria for assessing the success of this project.

In my opinion, the plan of the project, including its expected output, was suitable and realistic. The expected numbers are reasonable results one would expect from a community of diligent and industrious participants that works according to high standards of excellence. The *expected* output was therefore perfectly suitable for the length of time and amount of money dedicated to the project.

How do they compare with the actual produce of the project?

The numbers of the *actual* product of the project were as follows. 40 papers were published in journals and edited peer reviewed volumes (additional 15 are in progress); 2 books are in progress; 7 book reviews were published (additional one in progress); 3 doctoral dissertations were completed (another one in progress); 3 Master Theses were completed; 1 edited special issue of journal was published; and 5 workshops took place with 23 invited speakers. In addition, the participants in the project delivered 150 papers in international and national conferences and workshops in universities around the world. (These products are specified in the project's final report prepared by S.Psillos.)

What do these numbers tell us about the project?

(a) The plan was that 3 doctoral dissertations will be produced and that "a number of research students will have been trained to do serious philosophical research."³ The actual production was 3 completed doctoral dissertations, 1 in progress, and 3 completed Masters theses. This good harvest is due to the dedication of time and effort by students as well as the teachers that participated in the project. The fact that the doctoral students received financial support from the project enabled them to dedicate full time to their studies and complete their degrees. Doctoral students have emphasized the contribution to their dissertations of the seminar, the workshops, and the exchange of ideas with project members – all of which formed part of the project. In addition, 3 papers were published and several talks were given by the graduate students that participated in the project (details can be found in the project's final report).

³ As stated in the proposal that got funded.

A related expected output that was specified but (aptly) not in numbers was that “post-doctoral researchers will have the opportunity to enhance their research profile and compete for high-level jobs.”⁴ 13 post doctoral fellows formed part of the project’s team and participated actively in its national and international activities, thus fulfilling this goal. Papers were published and talks were given in international and local workshops by the post-doctoral students that participated in the project (details can be found in the project’s final). Several students found jobs abroad; details are in section (ii)(d) below.

(b) The plan was to produce 25 papers in learned journals and edited collections, a very reasonable output given the number of participants, the length of time needed to produce a research paper, and the length of time its review process and publication requires. However, the actual number of papers produced was exceedingly *larger*: 40 papers were published in journals and edited peer reviewed volumes (additional 15 are in progress) plus 7 book reviews (additional one in progress) – together 47 papers (plus 16 in progress). This harvest is impressive and can only be explained (again) by unusual dedication of time and effort on part of the participants in the project.

(c) The plan was to produce 2 books, but the production of a book normally takes longer than the duration of the project, and for this reason the two books are still in progress. Together with the large harvest of papers by the participants, this result is respectable.

(d) During the period of the project, out of the planned 8 workshops 5 took place, with 23 invited speakers. This may be partly due to the fact that the funds available to the project were considerably less than the amount that was initially requested. In my opinion, given the available funds and other resources this number of workshop is suitable and can definitely be considered as fulfilling this part of the plan.

In sum, in terms of numbers, the project fulfilled its goals and sometimes surpassed them. Despite the fact that the funds that were received for the project were considerably less than the amount of the application (total of 457800 instead of 600000 Euros), the participants in the project managed to carry out their tasks, sometimes beyond the original plan. This attests to the commitment of the participants at all levels to the project and their willingness to dedicate time and effort to ensure its success.

ii People

The APRePoSma research project was carried out by a group of people from three universities: University of Athens (UoA), Aristotle University of Thessaloniki (AUTH), and the National and Technical University of Athens (NTUA). The group comprised 12 university staff members (who are internationally acknowledged experts in the philosophy of science), 13 post doctoral fellows, 9 graduate students, and 6 unpaid researchers: total 40 people. In this section I will focus on various effects of this project on the members of its team.

(a) The project application took place in 2009, but the onset of the crisis in Greece soon afterwards gave it special importance. The framework of regular meetings and workshops, accompanied by salaries and fellowships post-doctoral and graduate students made it possible to maintain a thriving group of philosophers of science in Greece despite the

⁴ As stated in the proposal that got funded.

challenging conditions. For the post doctoral and graduate students as well as for the unpaid researchers the project became an essential and even crucial part of their ability to remain active in the field. These participants report that they felt that the project and especially the seminar meetings were a “safe harbor” for them. It also contributed to the ability of the university staff members to maintain their high standards of work, since the project enabled them to travel abroad and thus preserve and expand their international connections, and to carry out large scale projects together with their students. Many of the project members expressed the sentiment that feeling part of a community that shared interests and plans eased a bit the difficulty of continuing the intellectually demanding work in inconvenient conditions.

It should, however, be emphasized that the project would have been important to its team members also had the crisis not happened – and indeed the application was made before this, and with other advantages in mind. Those other goals have also been achieved, and I now turn to describe how.

(b) By training postdoctoral and doctoral researchers a cohesive group of younger scholars was created. In my discussions with them, these young members of the team emphasized the significance of the regular seminar meetings in which they came to know each other personally as well as each other’s work, and shared and exchange ideas in order to improve their research. In this seminar the younger members had the opportunity to be exposed to the habit of mutual friendly intellectual criticism. The seminar took place at the UoA but members of NTUA became (due to this project) an integral part of this forum (on AUTH see comment below.) One team member (Livanios) who was interested in more extensive feedback on his own work organized an additional reading group that lasted for a few months, and another reading group was initiated at NTUA to discuss topics that were of special interest to them.

The project’s participants expressed their will to continue their meetings and exchanges even after the project ends, in order to support each other’s research and enhance the overall impact of their activities. They have made some specific plans, and there is reason to believe that this plan will be carried out, thus continuing the project beyond its formal period.

(c) The project not only helped maintain the existing group of young philosophers, but has also helped in adding new members to it. One team member that finished his Masters degree chose to continue to a doctorate, and the membership in the project team encouraged him in this decision. Team members have said that young students that attended workshops and talks that were part of the project became interested in philosophy of science and consequently enrolled in graduate studies in this field.

(d) Also of great importance is that the group of young scholars that participated in the project has growing international reputation. One of them (Livanios) received a position as a lecturer in Cyprus; another (Pechlivanidi) received a post doctoral fellowship on Western University at London Ontario, Canada; a third (Goudarouli) has the position of a research assistant in the University of Warwick, UK. It is reasonable to assume that the exposure of these young people to the international standards of work as part of the project was of critical importance in this achievements.

(e) A central aim of the Thales programme, that funded the APRePoSMa project, is about *“Reinforcement of the interdisciplinary and/or inter-institutional research and innovation”*⁵. This aim was fulfilled in this project, since the participants came from three central institutes in Greece. In my discussions with the team members I have found that the teams of the two Athenian institutes (UoA and NTUA) formed a cohesive group that has met frequently and is likely to continue doing so.

The third institute (AUTH), due to its geographical distance from the other two, was less able to become an integral part of the group on a daily basis. Nevertheless its members emphasized that the very fact that they were members of the team made them more aware of the research that is going on in the other institutes, and this has contributed to their research, as well as to their self-identity as member of the Greek community of philosophers. They expressed a desire to facilitate travel to the other institutes and dedicate more funds to it in future joint projects, to which they look forward.

Moreover, during the time of the project the AUTH has established a research institute dedicated to the study of Aristotle’s scientific heritage and they are planning a large international congress on the topic. In my opinion this achievement was greatly affected by the fact that they formed part of the collaborative APRePoSMa project and is in large part due to the exposure of the team members to high international standards as part of this project.

(f) An important by-product of the project, especially for the NTUA team, was the initiation of collaboration with scientists at the computer science department. This result is one of the aims of the Thales programme, *“Reinforcement of the interdisciplinary ... research and innovation”*⁶.

(g) Notably, 14 out of the 40 participants in the project, and 50% of the post doctoral and graduate students in the project, are women. Given the fact that internationally the percentage of women in philosophy of science is low, this number attests to the special effort that was made to encourage the participation of women in the research network. This fact is likely to have a long term effect of the community, if and when job openings will become possible.

(h) Last but not least: It is easy to see that the project was a complex combination of activities, and those required extensive administrative work. It is important to emphasize that the success of the project was enabled by the special efforts of a group of 4 post doctoral fellows (Nounou, Goudarouli, Pechlivanidi, Ioannidis; guided and directed by the project director, S.Psillos) whose hard work made the success possible. In addition, post doctoral students (especially Panagiotatou) organized the weekly seminar, and participated in organizing the international workshops (Goudarouli, Nounou, Stergiou, and more). As a result, there are now in Greece young people that are skilled to carry out such large scale project, as well as preparing and running workshops, and this may have benefits in future national and international projects.

⁵ From the Thales website.

⁶ From the Thales website.

iii International connections

The overarching goal behind all the particular measurable aims was that “By the end of the research period, there will be a sustainable network of excellence in the area of philosophy of science in Greece with an important role in the generation of innovative philosophical thought and solid relations of co-operations capable to attract the attention of researchers from around the world. When it comes to scientific realism, Greece will be one of the best places in the world to do research in this area. The network will be able to extend its research into areas that will require and foster collaboration with scientists.”⁷ Now, that the project comes to its closing, it is clear that this project has established the hoped-for sustainable network of excellence in philosophy of science in Greece, which makes Greece an internationally attractive place to study philosophy of science and especially Scientific Realism with its various sub topics.

A central aim of the Thales programme, that funded the APRePoSMa project, is about “*attracting high standard researchers from abroad through the implementation of basic and applied excellence research*”⁸. This task was carried out in a number of ways.

(a) The project was supported by a team of external collaborators from UK, Germany, Italy, USA, Belgium, Denmark, and Australia. These collaborators visited the participating institutes in Greece, and participated in the project’s international workshops. By interacting with the local team members these external collaborators contributed to the performance of the project’s tasks.

(b) In 5 international workshops that took place as part of the project 23 guests from abroad participated, and at the research seminar at UoA out of 39 lectures 7 were by guests from abroad. This exposed the participants in the project to advanced level discussions by leading figures in the field, and made it possible to these guests to get to know the community in Greece. Younger members of the project team expressed the wish that, in future projects, part of the plan will be to dedicate time for more meetings of the post doctoral and doctoral students with the visitors from abroad, so as to receive more feedback from them and consult with them on various matters. To my mind, this desire attests to the success of the project since these young scholars became aware of the need to interact with the international community in order to improve their work and, at the same time, gained confidence in their own work, enough to discuss it with leading scholars in the field.

(c) Members of the research team presented around 150 papers in a number of international conferences. This made the research carried out in Greece visible to the international community.

(d) A journal named *Analytica* has been published by the UoA team under the auspices of the project. “*Analytica* is an open-access, English-language electronic journal dedicated to philosophy of science. It is edited by a younger generation of Greek philosophers of science, with the aid and support of an international advisory board. Motivated by the ambition to develop and advance the involvement of the Greek philosophy of science community in the international philosophical scene, *Analytica* provides a platform for peer-reviewed original contributions in philosophy of science. Furthermore, since *Analytica* was conceived in the

⁷ As stated in the proposal that got funded.

⁸ From the Thales website.

midst of a socioeconomic crisis in Greece, it amounts to an act of intellectual resistance, aiming to bring forth the strength and dynamism of philosophy of science in Greece.”⁹ The journal is still young, and so far two papers have been published in it, by a USA based and a Canada based scholars; I can attest that both are of excellent quality. Clearly, this journal contributes to the international status of the Greek philosophy of science community, by having an internationally distinguished team in the advisory board; by inviting paper from scholars around the world; and by being read around the world. It is of particular importance that the editors are young philosophers of science, thus exposing them and introducing them to the international community.

iv Back to the intellectual achievements

As I said above, since the APRePoSMa project is a philosophical project, the hope in planning it was to contribute to the advancement of knowledge in this field. The measurable deliverables indicate the achievement of the intellectual goal. I now turn to examine the merit of the intellectual accomplishments of this project, based on looking at written material and on discussions with the participants.

In broad outline, as stated in the proposal that got funded, “This project aimed to investigate the philosophical and conceptual presuppositions of the modern scientific worldview. The core of the project was the issue of scientific realism. Research covered all aspects of the scientific realism debate, including the metaphysics of scientific realism and its epistemology.” Details of the sub-topics that were emphasized in the project appear in the proposal and in the project’s final report, so I will not repeat them here.

The research topics were divided into 10 work packages, 8 of which were led by the UoA team, 1 by the AUTH, and 1 by the NTUA. These work packages were planned according to the expertise of the main research teams, and accordingly they comprised a variety of opinions on a wide range of sub-topics. Nevertheless, since the project was funded as a whole it seems to me right to assess its achievements as a whole, without entering into the differences between the institutes and the work packages.

By merely looking at the list of published papers that are part of the APRePoSMa project one can see that they appeared in leading journals in the field, and since these journals accept papers for publication following a review process by an international team of leading experts, the publication attests to the fact that the papers satisfy the highest international standards. Journals include: *Studies in History and Philosophy of Science*; *Erkenntnis*; *Theoria*; *Foundations of Physics*; *Synthese*; *Philosophical Quarterly*; *Notre Dame Journal of Formal Logic*; *The British Journal for the Philosophy of Science* (submitted); *Analysis* (submitted); and more, and in addition papers were published in special collections.

I have read and listened to the project members’ descriptions of the contributions they have made to each of the relevant work packages, had a look at some of the publications, and talked to the members of the teams. Here are my impressions.

The research under the umbrella of the APRePoSMa project covered the subjects that were described in the aims of the project, and in these subjects offered progress to the discussion of

⁹ From the journal’s website.

Scientific Realism. This contribution is significant both at the level of the individual contribution, and at the level of the project as a whole. Individually, each paper, lecture, book review, book, and dissertation presented a high quality discussion of one of the problems described in the aims of the project. (Details on this can also be found in the summaries written by the individual participants and presented in the project's final report.) All of these were judged according to the high standards that are used by the editors and reviewers, before acceptance for publication or for presenting lectures in conferences, and this ensures their high quality. This high quality is of the contributions examined individually.

Seen as a whole, the very fact that these individual contributions formed part of a large scale project gave them additional value, from within and from the outside. From within, the researchers that worked on the various sub-topics of Scientific Realism were aware that others in the team are working on other sub-topics, and had the chance to interact with them in seminars, lectures and workshops, and receive learned feedback on their work, thus improving it. From the outside, as one looks at the product of this project as a whole, one gets the impression of the big questions and their detailed examination, and sees that the field as a whole has progressed substantially due to the special effort that was made in it, as part of the project. Judging the product of the project as a whole it is clear that it contributed to contemporary research in the field, at both the individual and the shared research levels.

v Future continuation and long term results

In the discussions with the team members some have expressed the worry that the formal end of the project will bring to an end some of the fruits that grew as part of it. In my opinion some of these worries are for no reason, since we may reasonably expect that some important aspects of the project will continue and thrive.

(a) It is true that the funding offered to the younger researchers strengthened their motivation to join the project at the beginning. But now, after they have experienced what the project had to offer, many of them are willing to pursue some of its activities even without the funding. The participants in the project now realize the advantages of being members of a cohesive collaborating group, and they already made specific plans to continue the seminar meeting, which many saw as pivotal to the project's success. At this stage, this does not require active part nor funding on the part of the universities (which anyhow lack resources at this time). I see this as a major sign of the success of the project and its long term importance for philosophy in Greece.

(b) Another long lasting effect of the project is educational, in that the community became accustomed to high international standards of performance and delivery, and to interactions with leading members of the international community. Needless to say, such an educational effect is long lasting.

(c) A third way in which the fruits of the project will continue is the journal *Analytica*, described above. Seeing the advantage of having a Greek journal with international contributions, and the advantage of being editors of such a journal, its editors (who are post doctoral students that participated in the project) are willing to continue working for it, even though it may now become a voluntary job.

IV Conclusion

The APRePoSMA project satisfied all the goals set for it: the general aims of the Thales programme; the quantified goals set by the project's planners; and the qualitative goals. While the contents of the project is to study the philosophical problem of Scientific Realism – an intellectual goal that was satisfied by the highest standards in this project – important by-product of this intellectual endeavor have been achieved. A network of experienced as well as young researchers was established in Greece, comprising several institutes and a range of career levels, from masters students and doctoral students, through post-doctoral students, to senior researchers that are internationally leading figures in their field. The result is establishment of collaborations between sub-disciplines and institutions in the country. This network promises to have long-term effects on the future growth of the intellectual community in Greece. The project has helped to keep young scholars within the community, whether they have jobs or can expect jobs in the Greek academia in the near future or not. This is of special importance in these times of somewhat adverse conditions in the financial side of academic life in Greece, and in this sense the project benefits the society in Greece. Additionally, this project helped to place Greece as a center in the philosophy of science, strengthening the status of its researchers in the international community, and making Greece an attractive place for scholars to visit in order to exchange views and promote the pursuit of knowledge.

By the highest standards, the APRePoSMA project is a huge success.