

### General Information

**Name of Research Unit:** (HIS-LVT-286)  
Centro Interuniversitário de História das Ciências e da Tecnologia (CIUHCT)

**Coordinator:** A Uf]U'DUj `U'D]fYgXcgGubhcg'8]c[ c

**Main Scientific Domain:** História

**Other Subdomains:** n/a

### Host Institutions

**Leading Host Institution:** Faculdade de Ciências e Tecnologia - Universidade Nova de Lisboa

**Other Institutions Involved:** Fi bXU, -c `XU Faculdade de Ciências - Universidade de Lisboa

### Objectives & Achievements

#### Unit Description

The Centro Interuniversitário de História das Ciências e da Tecnologia (CIUHCT) is the result of the merging of two previous units in the area of History of Science and Technology: Centro de História e Filosofia da Ciência e da Tecnologia (CHFCT) (<http://chfct.fct.unl.pt>) and Centro de História das Ciências da Universidade de Lisboa (CHCUL) (<http://chcul.fc.ul.pt>).

The new unit comprises two research groups allocated to its two different host institutions (FCT/UNL and FC/UL). These institutions have recognized the importance of this field by creating respectively the Unit of History and Philosophy of Science (Department of Social Sciences) and the Autonomous Unit of History and Philosophy of Science. The two research groups in the Unit share a similar designation - Science and Technology (i) and (ii) - to stress that both have a common research agenda, although including eventually specific research topics. Another important difference relates to their association to different institutional settings. We have already signed a consortium agreement in order that the Principal Host Institution (FCT/UNL), as recipient of the unit's financial support, will transfer to the other host institution involved (FCUL through FFCUL), its corresponding funds calculated by multiplying the classification of the unit to the number of eligible PhDs of this host institution. In fact this process has not been smooth and we urge that alternatively the FCT/MCTES should be responsible for dividing funds among the two research lines of the unit.

Concerning scientific management, the unit will apply the rules outlined by the FCT/MCTES. Evaluation by international consultants selected by the unit among outstanding scholars in the area of History of Science and Technology is considered particularly important to secure the unit's high standards of scholarship.

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The CIUHCT aims at promoting research in the History of Science and Technology according to international standards of scholarship and at contributing to the development and consolidation of this discipline in Portugal.

Already established but still a growing area in Portugal, the very existence of this research unit is of paramount importance not only to support a permanent and consistent research practice, but also to promote a dialogue and exchange of information and views among researchers.

Furthermore, the new unit aims at contributing to the consolidation of a strong scientific community by actively participating in the education of students (graduate and post-graduate level) as well as by enrolling in outreach activities (popularization, exhibits). The CIUHCT is involved in two MSc programs and two PhD programs in the field. We envisage the articulation of a joint PhD program, to be expanded in the coming year to encompass several universities. We will also assess the advantages to fuse the MSc programs into a more ambitious one, taking advantage of our complementary subfields of expertise.

The unit aims at articulating discussion at the conceptual and methodological levels with research on specific topics especially focused on, but not restricted to, Portuguese history. In any case this focus does not preclude the integration of Portuguese research in international groups and initiatives. On the very contrary we consider our main mission to present our local case studies in a format appealing to an international audience. This international dimension has been greatly encouraged through the dissemination of research carried out locally in international publications as well as in the participation and organisation of national and international meetings. The unit shares a conception of the field encompassing both more traditional and more recent approaches, including material culture, instrumentation and collection based history of science, material reconstructions, technoscience, all framed in the context of methodological pluralism. Especially important has been the input from the framework developed within the international group STEP (Science and Technology in the European Periphery) and the move from relying on the concept of transmission and the perspective of the centre to the concept of appropriation and the perspective of the periphery. We also explore relations between the History of Science and Technology and the Philosophy of Science and the role of scientific-technological structures in contemporary thinking.

### **Main Achievements during the year of 2008**

The research agenda of the Unit for this period reveals continuity with that of 2003-2007. In the national context, the Unit's work contributed to an ever growing professionalization and institutionalization of the history of science and technology in Portugal. Furthermore, it engaged in bringing to the forefront of Portuguese History the role played by scientists and engineers.

Stress on internationalization continued to be a priority. The importance to frame case-studies in the history of science and technology in Portugal in a way appealing to an international audience was fundamental. Specifically the role played by the so-called peripheral countries in the development of science and technology as crucial parameters in shaping the identity of modern Europe is a methodological guide of the different case studies explored.

Besides on-going international and FCT projects main projects building a common identity for the Unit included: the up-grading of the bibliographic guide of History of Science and Technology in Portugal; contributions to the international journal HoST, its accompanying annual workshops and the launching of monthly HoST conferences by both well known foreign experts and national scholars; a pre-print series; collection of books published by CIUHCT; and finally accessibility of primary sources, namely on-line transcription and digitalization of manuscripts/printed works involved in projects carried out by Unit members. As far as the database project on Portuguese scientists and engineers is concerned no substantial advancement has occurred during 2008 and special attention will be paid to this project in the near future.

Networking activities, both at the national and international level, were deemed crucial to the Unit's development. Especially relevant for the Unit's research agenda is the participation in networks such as Science and Technology in the European Periphery (STEP), Tensions of Europe (ToE), International Network of Engineering Studies(INES) in the framework of which conceptual issues on Europe's identity and the changing relations

between so-called centres and peripheries are addressed; the Network of Portuguese and Brazilian museums of science for the emphasis on material culture, collections-based history of science, and specifically on the role of university collections within Europe.

The Unit's research groups work in synergy, sharing members, projects, and methodological choices and fostering research crossing over traditional disciplinary boundaries.

Another dimension of the professionalization of the discipline in Portugal, considered a priority for this Unit, is the on-going participation in the formation of graduate students and young scholars (scholarship holders, Post-Docs etc.). Supervision of MSc and PhD dissertations continued as well as a journal club put forward by graduate students and the organization of graduate students workshops.

## Activities

### Integrative/multidisciplinary activities during the year of 2008

#### 1. Individual lectures

\* ANTÓNIO MANUEL NUNES DOS SANTOS, "O Processo Galileu, Ciência vs Justiça", together with Juiz Conselheiro Fernando Pinto Monteiro, Procurador-Geral da República, organized by the Associação dos Juizes para a Cidadania, Hotel Mundial, 10 December 2008 (60<sup>o</sup> Anniversary of the Publication of the Humans' Rights).

\* PALMIRA FONTES DA COSTA, "Imagens da Natureza e Natureza das Imagens: Uma Perspectiva Histórica", Research project A Imagem na Ciência e na Arte, Faculdade de Ciências da Universidade de Lisboa, 18 February 2008.

\* FERNANDO EGÍDIO REIS, "The Portuguese Periodicals in the Seventeenth and Eighteenth centuries", Columbia University de Paris, Reid Hall, 7 February 2008

\* SAMUEL GESSNER, "O Globo de Christoph Schissler de 1575 existente no Palácio Nacional de Sintra: o uso dos globos celestes no séc. XVI", in III Colóquio Palácio Nacional de Sintra. Arte, história e vivências - séculos XVI e XVII, Sintra, Sala dos Cisnes, 26 November 2008.

\* MARTA LOURENÇO, "E se elas nunca tivessem existido? Reflexões sobre a importância das colecções de ensino e investigação das universidades europeias," Colóquio 'Património Imaterial – Saberes e Técnicas entre o Registo e a Transmissão', Instituto dos Museus e Conservação, Ecomuseu Municipal do Seixal, 27 June 2008.

\* MARTA LOURENÇO, "Entre dois mundos: as colecções de ciência e técnica das universidades europeias". Seminário 'Museus de Ciência e Técnica na Cidade do Porto: Significados e Direcções', Museu Parada Leitão, Porto, 19 May 2008.

#### 2. Sets of Lectures organized by members of the Unit

\* Seminars of Material Culture, Museus da Politécnica da Universidade de Lisboa (monthly)

\* Seminars of Portuguese Scientific Heritage, Museus da Politécnica da Universidade de Lisboa (monthly)

\* Seminars of Ancient Texts (monthly)

\* HoST conferences (monthly)

#### 3. Conferences

\* Board Game Studies Colloquium XI, Museu de Ciência da Universidade de Lisboa, 23-26 April 2008 (JNS organizing and scientific committee)

#### 4. Other projects

\* Project of translation of texts from Classical Antiquity, East Asia and China

#### 5. Competitions

4º Campeonato Nacional de Jogos Matemáticos, Universidade do Minho, Braga, 29 Fevereiro 2008 (Jorge Nuno Silva, organizing committee)

### **Outreach activities during the year of 2008**

#### 1. Individual lectures in secondary schools, and other institutions

\*A. M. NUNES DOS SANTOS

"História e Ciência, o encontro de saberes", Jornadas de Reflexão, A História como Profissão e as Utilidades do Saber Histórico, Museu da Presidência da República

"Os Encantos e Desencantos do Mundo", Associação Forense do Oeste, Caldas da Rainha

\* C. D. AURETTA

"Três Artistas na Encruzilhada da Memória e da Inovação (da Materialidade da Pedra à Imaterialidade Digital), Escola Secundária de Bocage, Setúbal

"Poets in a Global Perspective: From the Portuguese Tradition to a New World-View", Escola de Economia e Gestão, Universidade do Minho

"Brassã, Ron Mueck e Lee Mingwei: a Representação do Corpo Humano na Era Técnico-Científica", Escola Secundária António Arroio

"Tradição e Modernidade em dois Poetas Portugueses: Fernando Pessoa e António Gedeão", Associação Forense do Oeste, Caldas da Rainha

\*P. FONTES DA COSTA, "Arte e Biotecnologia", Escola Secundária António Arroio

\* F. EGÍDIO REIS, "Periodismo Científico na Europa Moderna", Master in History of Sciences, Faculdade de Ciências de Lisboa

\* H. LEITÃO, "Aventuras marítimas e problemas matemáticos: a navegação e os seus fundamentos científicos nos sécs. XV e XVI," conferences "Tardes de Matemática" da SPM, Funchal

\* J. M. MALHÃO PEREIRA

"A Expansão Portuguesa numa Exposição em Washington no Smithsonian Institute", Sociedade Histórica da Independência de Portugal

"Problemas Náuticos da Viagem de Vasco da Gama", Câmara Municipal de Lagos, conferences "Na Rota da Índia com Vasco da Gama"

"Gago Coutinho. Um Grande Português", Instituto Hidrográfico

"Afonso X o Sábio e o Início das Explorações Portuguesas do Atlântico", conferences "Tardes da Matemática", SPM, Funchal

\*J. N. SILVA

"Jogos e Matemática," Escola das Laranjeiras, Ponta Delgada. Invitation by the Universidade dos Açores.

"Jogos e Matemática," Escola da Lagoa, Ponta Delgada. Invitation by the Universidade dos Açores.

\*A. SIMÕES, "O movimento em Aristóteles, Galileu e Newton," Escola Secundária Casquilhos, Barreiro

## 2. Sets of lectures:

Graduate students of CIUHCT- Pólo Lisboa: (i) Journal Club open to all interested. In each session a paper is presented by one graduate student followed by discussion (see [http://chcul.fc.ul.pt/act\\_ii/journalclub.htm](http://chcul.fc.ul.pt/act_ii/journalclub.htm)); (ii) blog (see <http://jc-chcul.blogspot.com/>); monthly conferences on topics of interest for a general audience. National and international speakers.

## 3. Exhibits

"Mathematical Games throughout the Ages", Museu de Ciência da UL, (J. N. Silva, scientific organizer).

"Sphæra Mundi: A Ciência na Aula da Esfera." Biblioteca Nacional, (H. Leitão, scientific advisor, S.Gessner, B. Mota, co-organizers).

"Jogos de Tabuleiro e História da Matemática", FCUL, (J. N. Silva, scientific organizer).

"Nery Delgado (1835-1908), Geólogo do Reino", Museu Geológico, (A.Carneiro, scientific organizer)

## 4. Publications for the general public

J. N. SILVA, C. Santos, J. P. Neto, Jogos do Mundo, (Visão/Público, 2008), 10 vols.

J. N. SILVA, Os Matemáticos Silva (Apenas, 2008).

## 5. Other

\* 4º Campeonato Nacional de Jogos Matemáticos, Universidade do Minho, Braga (J. N. Silva, organizing committee)

\* J. M. MALHÃO PEREIRA, Participation in Discovery Channel, program on the Portuguese Discoveries, filmed in a replica of a Portuguese Caravel.

\* J. M. MALHÃO PEREIRA, scientific consultancy and training of staff, Câmara Municipal de Lagos, Centro de Ciência Viva.

## Funding

	2008	2009	2010
LA FCT	0,00	0,00	0,00
Units FCT	66.825,00	77.810,00	55.500,00
Projects FCT	21.152,52	132.063,91	132.193,00
Other (National)	3.000,00	0,00	15.000,00

	<b>2008</b>	<b>2009</b>	<b>2010</b>
Other (International)	2.000,00	6.500,00	16.110,00
National Industry	0,00	0,00	0,00
International Industry	0,00	0,00	0,00
	<b>92.977,52</b>	<b>216.373,91</b>	<b>218.803,00</b>

### General Indicators

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
No. of Researchers Proposed	0,00	0,00	1,00	0,00	0,00	1,00
No. of Researchers Hired (LA)	0,00	0,00	0,00	0,00	0,00	0,00
<b>Balance</b>	0,00	0,00	0,00	0,00	0,00	0,00
No. of Researchers Hired (Ciência Programme)	0,00	0,00	0,00	0,00	0,00	0,00
No. of Researchers integrated with PhD	15,00	18,00	21,00	20,00	27,00	
Training Masters (Master thesis completed)	4,00	9,00	2,00	2,00	0,00	17,00
Training PhDs (PhD thesis completed)	0,00	2,00	2,00	1,00	3,00	8,00

### Researchers Hired

<b>Name</b>	<b>Start Date</b>	<b>End Date</b>	<b>Other Institution</b>
No researchers found...			

### Technical Personnel Hired

<b>Name</b>	<b>Start Date</b>	<b>End Date</b>	<b>Other Institution</b>
No technical personnel found...			

### Additional Comments

#### Additional Comments

## Research Groups

### Reference

RG-LVT-286-1116

### Title / Principal Investigator

Ciência e Tecnologia (i): estudos históricos e interdisciplinares  
(Maria Paula Pires dos Santos Diogo)

RG-LVT-286-1600

Ciência e Tecnologia (ii): estudos históricos e cultura material  
(Ana Isabel da Silva Araújo Simões)

### **Group Description**

<b>Title of Research Group:</b>	(RG-LVT-286-1116) Ciencia e Tecnologia (i): estudos históricos e interdisciplinares
<b>Principal Investigator:</b>	Maria Paula Pires dos Santos Diogo
<b>Main Scientific Domain:</b>	História
<b>Group Host Institution:</b>	Faculdade de Ciências e Tecnologia - Universidade Nova de Lisboa

### **Funding, source, dates**

#### **Funding, source, dates**

Key-words: science and engineering; science, technology and empire; science/art/ethics; knowledge and authority

Funding:

1. I&D Unit: 40837,5

2. FCT projects:

\* M. P. Diogo, PI, The Popularization of Science and Technology, C2007/FCT 453 (2007-2012); Total Budget: Post-doc position during 5 years (Researcher: Maria Antónia Pires)

\* M. P. Diogo, PI, Portuguese Engineering and the African Empire: strategies of appropriation and management of the colonial territories of Angola and Mozambique (1850-1930); 2008 Budget: 5.600,00

\* I.Amaral, PI, Tropical Medicine and The Portuguese Colonies (1887-1942) FCT/POCI/HCT/60184/2004(2005-2007); 2008 Budget: 3.881,00

\* A. Carneiro, PI, Das Comissões Geológicas aos Serviços Geológicos (1848-1970): História e Herança Científica; 2008 Budget: 11.498,28

\* M. Lourenço, PI, Paving the way for integrated archival and collection-based research in the history of science: Preservation, access and case-studies of the collections of the Museum of Science (University of Lisbon); 2008 Budget: 11.494,28

\* A. Simões, PI, Reading newspapers: an open window to representations of Science and Technology in the Portuguese Press (1900-1926); 2008 Budget: 00,00

### **Objectives & Achievements**

#### **Objectives**

This research group shares a common agenda with the other research line of this unit. It will contribute to: a growing professionalization and institutionalization of the history of science and technology in Portugal; bring to the forefront of Portuguese History the role played by scientists and

engineers; and to analyze the role played by the so-called peripheral countries in the development of science and technology as crucial parameters in shaping the identity of modern Europe, namely by using the concepts of networking, circulation and appropriation of knowledge.

Together with our twin research line we are working on the following topics:

1. Popularization of science and technology in Portugal (18th-20th century)
2. Institutions for the Teaching of Science and Technology in Portugal
3. Collection based History of Science
4. History of Astronomy

Specific to this research group are the following research topics:

1. History of Geology
2. History of Life Sciences
3. History of Medicine
4. Engineering and Medicine in the Portuguese Empire
5. Engineering in Portugal
6. Intersections of science, art, literature, ethics, philosophy and society

All research projects have outputs, namely publications, organization of conferences and exhibits (see Group Productivity).

### **Main Achievements**

We committed ourselves to contribute to unveil the role played by science and technology in Portuguese history, mainly from the 17th to the mid 20th century, by exploring some specific topics on an interdisciplinary basis. The number of publications (25), papers presented at meetings (more than 50), and sessions/conferences organized by the team members (4) speak by themselves (see group productivity). A special reference should be made to the organisation of the leading world meeting in history of technology (50th SHOT conference). The significant number of lectures by invitation, both in Portugal and abroad, is also the recognition of the quality of the research group.

We continue to emphasise internationalization, and specifically by making known Portuguese case studies to the international community of historians of science and technology. Our strategy to rewrite the role of Portugal in the international context has been anchored in: (i) publications in international volumes, edited volumes and peer-reviewed journals; (ii) presentation of papers in international conferences; (iii) organization of sessions and conferences on topics related to the Portuguese case; (iv): editorial activity; (v) active participation in international research networks. We also engaged in conceptual and methodological international debates, namely concerning issues such as the relationship between centre(s) and periphery(ies), the meaning of being a scientist or an engineer in the periphery of Europe, the role played by the “tools of the Empire” in building up the Portuguese and the European identities.

Lectures and exhibitions to the general public were at the heart of our outreaching activities.

Finally we contributed to enlarge the national community of historians of science and technology, by encouraging new scholars to participate in our research projects and by inviting them to present their research to an international audience, notably within our MSc. and the PhD. programs. One of

our PhD. students was awarded the Dr Cornelius Lely Prize (T2M/Dutch Department of Public Works). We note that there are furthermore 8 on-going PhDs, 1 Post-Doc ongoing. We also participated in PhD and MSc defence committees in Portugal, as well as in various national graduate programs by delivering lectures or groups of lectures.

## **Group Productivity**

### **Publications in peer review Journals**

A. Simões; ANA CARNEIRO; MARIA PAULA DIOGO, "Issues in the historiography of science in Portugal during the 20th century", *Nuncius*, 23 (2008), 238-263

C. Oliveira, L. Rocha e CÂNDIDO MARCIANO DA SILVA, "Megalitismo funerário no Alentejo Central" - *Revista Portuguesa de Arqueologia*, 10, 2 (2008), 35-74

ISABEL AMARAL, "Colonial Hospital of Lisbon: a new space of medicalisation in the scope of Portuguese tropical medicine (1902-1942)", *Dynamis*, 28 (8) (2008), 301-328, 2008.

ISABEL AMARAL, I., R. E. Pinto, "Kurt Paul Jacobsohn (1904-1991)", *Revista da Sociedade Portuguesa de Química*, 11, (2008), 121-125.

JOSÉ LUÍS CÂMARA LEME, "Hannah Arendt. Política y desfactualización", *Devenires - Revista Internacional de Filosofía y Filosofía de la Cultura*, IX, 17 (Enero 2008), 118-135.

K. Gavroglu, M. Patiniotis, F. Papanelopoulou, A. Simões, ANA CARNEIRO; MARIA PAULA DIOGO, J. R. Bertomeu Sánchez, A. García Belmar, A. Nieto-Galan, "Science and Technology in the European Periphery: Some Historiographical Reflections", *History of Science*, 46 (2008), 153-175.

MARIA PAULA DIOGO, "Museums of Science and Technology in Lisbon", *Technology and Culture*, 49, 3 (2008), 764-772.

### **Other publications International**

ANA CARNEIRO, "An Interview with Sílvia F. de M. Figueirôa, Incoming President (2008-2012) of INHIGEO," *INHIGEO Newsletter*, 40 (2008), 31-34

ANA CARNEIRO, " L'Usage Technique et Symbolique des Cartes à la Commission Géologique du Portugal (1857-1908), " in Isabelle Laboulais, dir., *Les Usages des Cartes (XVIIe-XIXe Siècle). Pour une Approche Pragmatique des Productions Cartographiques*, Strasbourg, Presses Universitaires de Strasbourg, 2008, pp. 257-270.

JOSÉ LUÍS CÂMARA LEME, A Crise da Governamentalidade e o Poder Ubuesco, in *Cartografias de Foucault*, Durval Muniz de Albuquerque Júnior, Alfredo Veiga Neto, Alípio de Souza Filho (orgs.), Belo Horizonte, Autêntica, 2008, pp. 181-197.

MARIA PAULA DIOGO, "João Evangelista de Abreu", 1988-2008: 20 ans de double diplôme. Ingénieurs de l'Ecole des ponts. *Annuaire des doubles diplômés*, EPC, Champs-sur Marne; Paris, 2008, pp.4-5.

PALMIRA FONTES DA COSTA, Review of Lorraine Daston, ed., *Things that Talk. Object Lessons from Art and Science* (New York: Zone Books, 2004), *HoST: Journal of the History of Science*, Vol. 2 (<http://www.johost.eu>).

PALMIRA FONTES DA COSTA, H. Leitão, "Portuguese Imperial Science: A Historiographical Review.", in Daniela Bleichmar, Paula De Vos, Kristin Huffine (eds.), *Science, Power and the Order of Nature in the Spanish and Portuguese Empires*, Stanford University Press, 2008, pp. 35-53.

VANDA LEITÃO, ANA CARNEIRO, A. Simões, "Portugal: Tackling a Complex Chemical Equation: The Portuguese Society of Chemistry (1911-1926)," in Anita Kildebæk Nielsen e Sona Strbanova (eds.), *Creating Networks in Chemistry. The Founding and Early History of Chemical Societies in Europe*, The Royal Society of Chemistry, 2008, pp. 258-277.

### **Other publications National**

ANA CARNEIRO, "Catálogo" in Miguel de Magalhães Ramalho, coord., *Nery Delgado (1835-1908), Geólogo do Reino*, Lisboa, Museu Geológico/Centro de História e Filosofia da Ciência e da Tecnologia da FCTUNL, 2008, pp.117-163.

ANA CARNEIRO, "Nery Delgado (1835-1908), Geólogo do Reino" in Miguel de Magalhães Ramalho, coord., *Nery Delgado (1835-1908), Geólogo do Reino*, Lisboa, Museu Geológico/Centro de História e Filosofia da Ciência e da Tecnologia da FCTUNL, 2008, pp. 8-27.

CHRISTOPHER DAMIEN AURETTA, "Abordagens interdisciplinares ao «psychisme hydrant» bachelardiano na poesia de António Gedeão e Jorge de Sena: uma poética da metamorfose", *Carnets, Revista Electrónica da Associação Portuguesa de Estudos Franceses*, nº 1, 2008, 33-54

CHRISTOPHER DAMIEN AURETTA, "Poética e pedagogia do póstumo na obra de António Gedeão", in Isabel Rio Novo e Célia Sousa Vieira (orgs.), *António Gedeão / Rómulo de Carvalho, Novos Poemas para o Homem Novo, Actas do Colóquio Internacional António Gedeão/Rómulo de Carvalho*, 23-24 Novembro, 2006. Maia: ISMAI, 2008, pp. 109-123.

ISABEL AMARAL, *A Origem das Espécies e a sobrevivência do mais apto*", *Annualia 2008-2009*, 241-246.

ISABEL AMARAL, "Max Karl Ernst Ludwig Planck (1858-1947) – O nascimento da Física Quântica", *Annualia 2007-2008*.

JOSÉ LUÍS CÂMARA LEME, Michel Foucault. *Pensar de fora o Ocidente ou como rir das nossas verdades*, in "Fora" da *Filosofia - As formas de um Conceito em Sartre, Blanchot, Foucault e Deleuze*, Lisboa, CFC, Lisboa, 2008, pp. 99-110.

PALMIRA FONTES DA COSTA, "Ribeiro Sanches e o primado da conservação da saúde pública", in Constantino Sakellarides, Manuel Valente Alves (eds.), *Lisboa, Saúde e Inovação: Do Renascimento aos Dias de Hoje*, Gradiva, 2008, pp. 81-85.

PALMIRA FONTES DA COSTA, "Singularidade, Sexualidade e Género: O Estatuto do Hermafrodita Humano na *Encyclopédie de Diderot e d'Alembert*", in: Luísa Couto Soares (ed.), *O Estatuto do Singular: Estratégias e Perspectivas*, Lisboa, Imprensa Nacional Casa da Moeda, 2008.

TERESA SALOMÉ MOTA , "A questão de Goa: a cartografia geológica ao serviço dos interesses coloniais do Estado Novo", *Memórias e Notícias, Departamento de Ciências da Terra da Universidade de Coimbra*, nº3 (nova série), 2008, 329-335.

TERESA SALOMÉ MOTA, "Os manuais de Geologia do ensino liceal durante o Estado Novo (1947-1974)", *Memórias e Notícias, Departamento de Ciências da Terra da Universidade de Coimbra*, nº3 (nova série), 2008, 337-342

### **Master and Ph.D. thesis completed**

Ana Paula Silva, Introdução das Telecomunicações Eléctricas em Portugal: 1855-1939,

### **Organization of conferences**

MARIA PAULA DIOGO, 2nd INES Meeting (Internacional Network of Engineering Studies), Monte de Caparica, 15-16 October

MARIA PAULA DIOGO, 50th SHOT Meeting (Society for the History of Technology), Lisboa, 11-14 October

PALMIRA FONTES DA COSTA, Concepções sobre o Corpo no século XVIII: Um Colóquio de Homenagem a Albrecht von Haller no tricentenário do seu nascimento, Lisboa, November

TERESA SALOMÉ MOTA, SIC (Scientific Instruments Commission), Lisboa, October

### **Internationalization**

#### 1. Research Projects:

\* M. P. DIOGO (Leading researcher of the Portuguese team), Ingeniería y Cultura científica en Cataluña y España (1720-2000); Leading Researcher: A. Roca Rossel, ETS de Ingeniería Industrial de Barcelona

\* M. P. DIOGO, Making Europe: Technologies and Transformations, 1850-2000 (book series; coord. Johan Schot, University of Eindhoven), vol 1, Maria Paula Diogo, Dirk van Laak, and Matthias Middell, Europe in the Global World.

#### 2. Publications:

Besides several international publications, 1 publication with foreign colleagues

\* K. Gavroglu et al., "Science and Technology in the European Periphery: Some Historiographical Reflections", History of Science, 46 (2008), 153-175.

#### 3. Communications:

Besides several international communications, 1 communication with foreign colleagues

• J. Catalá-Gorgues, ANA CARNEIRO, "Los Inicios de la Carta Geologica de europa", X Trobada d'Historia de la Ciència i de la Tècnica da Societat Catalana d'Historia de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Universidade de Lleida, 13-15 de Novembro, 2008.

#### 4. Consultancy

\* A. Carneiro, Advisor to the Science Museum of the University of Lisbon, Chemical Laboratory.

\* M. P. Diogo, member of the Melvin Kranzberg Prize Committee (SHOT)

#### 5. Graduate Training Networks:

\* Tensions of Europe Summer Schools (lecturer M. P. Diogo)

\* Summer Course Técnica e Ingeniería en España: Lenguajes, Conceptos,

\* Métodos y Patrimonio en el Ochocientos, University of Saragoza, Spain, (lecturer M. P.Diogo)

\* University Nouvelle Sorbonne/Paris 3: 1 PhD. Student

\* University of Eindhoven (The Netherlands): 1 Pos-doc Student

\* Berkeley University (USA): 1 Pos-doc Student

6.International research networks;

\* Science and Technology in the European Periphery-STEP (several members of the Unit (senior and students) (<http://www.cc.uoa.gr/step/>)

\* Technology in the Making of 20th century Europe: ToE (M. P. Diogo, A. P. Silva, L. Sousa) (<http://www.tensionsofeurope.eu/>)

\* International Network of Engineering Studies (M. P. Diogo) (<http://www.inesweb.org/>)

7. See "Organization of Conferences"

8. Others:

\* M. P. Diogo, Associate Editor of Journal of Engineering Studies (<http://www.tandf.co.uk/journals/test>)

\* A. Carneiro, M. P. Diogo, Editorial Board of HoST (<http://www.johost.eu/>)

\* A. Carneiro, Book Review Editor of HoST

\* Refereeing in International Journals (several senior members of the Unit)

### Group Description

<b>Title of Research Group:</b>	(RG-LVT-286-1600) Ciência e Tecnologia (ii): estudos históricos e cultura material
<b>Principal Investigator:</b>	Ana Isabel da Silva Araújo Simões
<b>Main Scientific Domain:</b>	História
<b>Group Host Institution:</b>	Faculdade de Ciências - Universidade de Lisboa

### Funding, source, dates

#### Funding, source, dates

Keywords: physical sciences, 15th-20th c; technology; material culture; mathematical games

Funding, source, dates

1. I&D Unit: 25 987,50 euros

2. FCT projects:

"Scientific heritage and manuscript culture: the collection of scientific manuscripts of the Biblioteca Nacional, Lisboa". POCTI/HCT/58543/2004. PI: Henrique Leitão (2005-2008). Funding: 11262,70 euros

"Paving the way for integrated archival and collection-based research in the history of science: Preservation, access and case-studies of the collections of the Museum of Science (University of Lisbon)". PTDC/HAH/64181/2006. PI: Marta Lourenço (2008-2011). Funding: 9889,82 euros

"Reading newspapers: an open window to representations of science and technology in the Portuguese press (1900-1926)". PTDC/HCT/68210/2006. PI: Ana Simões (2008-2011). Funding: 0 euros

Other sources of funding:

Institutional Histories of Polytechnic School and Faculty of Sciences, Contract Compromisso Ciência nº17/Ciência2007/2007 (C2007-UL-58-MP); Total Budget: Post-doc position during 5 years (Luís Miguel Carolino)

"The role of mathematical instruments in the emergence of modern science" Cogito Foundation, Switzerland (2007-2009), 2000 euros

Support granted to the Collection Ciência e Iluminismo (Porto Editora), Fundação Calouste Gulbenkian, 3000 euros

## **Objectives & Achievements**

### **Objectives**

This research group shares a common agenda with *Ciência e Tecnologia* (i) made visible by the scientific organization of this Unit. Participation in collective projects aims at building a common identity for the Unit and includes a database of Portuguese scientists and engineers; bibliographic guide; HoST workshops and conferences; pre-print series; and finally accessibility of primary sources.

Beyond former collective ventures, projects will be implemented including members of the 2 groups. Such is the case of the two projects (popularization of science and institutional histories) associated with two Post-Docs under *Compromisso com a Ciência 2007* and two projects (popularization, collection-based history of science).

Specific to this research group, and bearing continuity with former research activities, the following research topics will be under scrutiny:

- History of physical sciences, 15th-20th centuries: completion of the Complete Works of Pedro Nunes; role of mathematical instruments and question of mathematical certainty in the emergence of modern science; institutional histories of Polytechnic School, Faculty of Sciences of University Lisbon and Astronomical Observatory of Lisbon, emergence and development of scientific disciplines (physics, chemistry, astronomy, meteorology etc); popularization of science and technology; historiographical considerations on science in the European Periphery; historiographical considerations on the history of quantum chemistry.
- Material culture and collection based history of science – case studies involving collections held at Museum of Science and the disassembled collection of the Cabinet of Physics of Ajuda. Special emphasis will be given to the organization of working tools, namely the production of an inventory of national scientific heritage, and the participation in the production of a Thesaurus of Scientific Instruments in Portuguese;
- History of mathematical games – Study of differential evolution of games migrating from Africa to the Madeira island and the Portuguese mainland.
- History of technology - plastics and PVC

Obviously, former topics will integrate research by graduate students.

### **Main Achievements**

The number of publications (16+14+16+ 11 in press), papers presented at international (32), and national conferences (39), including invited talks, and sessions/conferences organized by team members speak by themselves. (See Group Productivity).

A special reference to the organisation of the XXVII Symposium of the Scientific Instrument Commission held at Museum of Science of the University of Lisbon.

The significant number of lectures by invitation, both in Portugal and abroad, is also the recognition of the quality of the research group.

We continued to emphasize internationalization, specifically by making known Portuguese case studies to the international community of historians of science and technology. Our strategy to rewrite the role of Portugal in the international context has been anchored in: (i) publications in international volumes, edited volumes and peer-reviewed journals; (ii) presentation of papers in international conferences; (iii) organization of sessions and conferences on topics related to the Portuguese case; (iv): editorial activity, including the edition of Complete Works of Pedro Nunes; Collection History and Philosophy of Science; Collection Science and Enlightenment and Collection CIUHCT; (v) active participation in international research projects (3) and networks (2). (For internationalization of CIUHCT- Pólo Lisboa see Internationalization). We also engaged in conceptual and methodological international debates, namely concerning issues such as the relationship between centre(s) and periphery(ies), and the meaning of being a scientist in the periphery of Europe.

Lectures and exhibitions (organization of 3 Exhibits) to the general public were at the heart of our outreaching activities.

Finally we contributed to enlarge the national community of historians of science and technology, by encouraging new scholars to participate in our research projects, notably within our MSc and the PhD programs. Specifically 1 PhD was completed to which was awarded the Prize "Jeune Historien" by the Académie Internationale d'Histoire des Sciences, and 2 MSc completed. We note that there are furthermore 8 on-going PhDs, 5 on-going MSc, 1 Post-Doc completed, 1 Post-Doc ongoing. We also participated in PhD and MSc defence committees in Portugal (15), as well as in various national graduate programs by delivering lectures or groups of lectures.

## **Group Productivity**

### **Publications in peer review Journals**

L.M. Carolino, "The making of a Tychonic cosmology: Cristoforo Borri and the development of Tycho Brahe's astronomical system in the early seventeenth-century", *Journal for the History of Astronomy*, 39 (3) (2008), 313-344.

Pedro Raposo, review of Roger Hutchins, *British University Observatories (1772-1939)* (Ashgate, 2008)

[*Nuncius – Journal of the History of Science*, 23 (2) (2008), 450-1]

Dores Ferreira, Pedro Palhares, Jorge Nuno Silva, "Padrões e jogos matemáticos," *REVEMAT*, V3.3, p.3040, UFSC, 2008.

Carlos Santos, Jorge Nuno Silva, "Konane has Infinite Nim-Dimension", *Integers*, G2, 8 (2008):<http://www.integers-ejcnt.org/vol8.html>

Jorge Nuno Silva, "Emoções em Grafópolis", *Gazeta de Matemática* 154 (2008), 5-6.

Jorge Nuno Silva, "Euler e a matemática recreativa", *Boletim SPM*, special issue Euler, (2008), 73-85.

Jorge Nuno Silva, "Notas sobre o problema anterior e Problemas de balanças", *Boletim SPM*, 58 (2008), 91-94.

Jorge Nuno Silva, "A visita da velha senhora", *Gazeta de Matemática* 155, (2008), 5-6.

Jorge Nuno Silva, "Notas sobre o problema anterior e A Utilidade dos Jogos", *Boletim SPM* 59 (2008), 9395.

Jorge Nuno Silva, "Par ou ímpar?", *Gazeta de Matemática* 156 (2008), 5-6.

ANA SIMOES, Ana Carneiro, Maria Paula Diogo, "Perspectives on Contemporary History of Science in Portugal" *Nuncius* 23 (2) (2008), 237-263.

Ana Simões, "A quantum chemical dialogue mediated by textbooks: Pauling's *The Nature of the Chemical Bond* and Coulson's *Valence*," *Notes and Records of the Royal Society of London*, 62 (2008), 259-269.

Kostas Gavroglu, Manolis Patiniotis, Faidra Papanelopoulou, ANA SIMOES, Ana Carneiro, Maria Paula Diogo, Jose Ramon Bertomeu-Sánchez, Antonio Garcia Belmar, Agusti Nieto-Galan, "Science and technology in the European periphery. Some historiographical reflections", *History of Science* 46 (2008), 153-175.

Ana Simões, "Equilíbrio impossível: Max Planck no período do Terceiro Reich," *Gazeta de Física*, 31(4) (2008), 17-19.

Ana Simões, "Max Planck um revolucionário conservador (1858-1947)," *Gazeta de Física*, 31(3) (2008), 7-11.

Ana Simões, "Memórias de uma cidade renascida: Berlim, física e Max Planck," *Gazeta de Física*, 31(1/2) (2008), 13-16.

### **Other publications International**

Maria Elvira Callapez, "The History of Technology in Portugal," *Newsletter of the International Committee for the History of Technology ICOHTEC*, 42 (September 2008) (<http://www.icohtec.org>).

Maria Elvira Callapez, "An Environmentally Friendly Portuguese Manufacturing Company - CIREs", in José Ramón Bertomeu-Sánchez, Duncan Thorburn Burns, Brigitte Van Tiggelen, eds., *The 6th International Conference on the History of Chemistry: "Neighbours and Territories: The Evolving Identity of Chemistry"* (Leuven, 2008), pp. 515-527.

L.M. Carolino, "As razões de Cristoforo Borri: matemática, astronomia e inovação cosmológica em Portugal (1626-1632)" in Roberto Martins de ANDRADE et al., eds., *Filosofia e História da Ciência no Cone Sul. Seleção de trabalhos do 5º Encontro* (Campinas, Associação de Filosofia e História da Ciência do Cone Sul (AFHIC), 2008), pp. 267-275.

L.M. Carolino, "Deus, o artesão e o mundo: natureza e causalidade entre molinistas e bañezianos" in Marta de ALMEIDA, Moema de Rezende VERGARA, eds., *Ciência, História e Historiografia* (São Paulo / Rio de Janeiro, Via Lettera / Museu de Astronomia e Ciências Afins, 2008), pp. 335-346.

Henrique Leitão, "The contents and context of Manuel Dias' Tianwenlüe", in Luís Saraiva, Catherine Jami, eds., *History of Mathematical Sciences: Portugal and the East, III. The Jesuits, the Padroado and East Asian Science (1552-1773)* (Singapore: World Scientific, 2008), pp. 99-121.

Palmira Fontes da Costa, HENRIQUE LEITAO, "Portuguese Imperial Science: A Historiographical Review", in Daniela Bleichmar, Paula de Vos, Kristin Huffine, Kevin Sheehan, eds., *Science in the Spanish and Portuguese Empires, 1500-1800* (Stanford, Calif.: Stanford University Press, 2008), pp. 35-53 (notes, pp. 335-343).

M.C. Lourenço, "Entre deux mondes: Avenir des collections d'enseignement et de recherche" in P.-A. Gérard, *Les collections scientifiques des universités, Collection 'Histoire des Institutions Scientifiques'* (Presses Universitaires de Nancy, 2008), pp. 15-25.

M.C. Lourenço, 2008. "Where past, present and future knowledge meet: An overview of university museums and collections in Europe" in C. Cilli, G. Malerba, G. Giacobini, *Il Patrimonio della Scienza. Le collezioni di interesse storico* (AMNS, Torino, 2008), pp. 321-329.

José Manuel Malhão Pereira, "Goa Daman and Diu, Safe Harbours for the Portuguese Trade", *Proceedings of the International Seminar on Cities of Medieval India (1200-1800)* (New Delhi: Jawaharlal Nehru University, 2008).

Vanda Leitão, Ana Carneiro, ANA SIMOES, "Tackling a complex chemical equation: The History of the Portuguese Society of Chemistry (1911-1926)" in Anita Kildebæk Nielsen, Sona Strbanova, eds., *European Chemical Societies. Comparative Analyses of Demarcations* (London: Royal Society of Chemistry, 2008), pp. 257-80.

Ana Simões, "History of Science in Portugal: where do we stand today," History of Science Society Newsletter, July 2008, 16-17.

Ana Simões, "Introduction to Session 'Chemistry in relation to physics," Proceedings of the 6th International Congress for the History of Chemistry (Leuven, 2008), 159-162.

Ana Simões, "Dangerous liaisons or unavoidable associations: quantum chemistry at the crossroads of chemistry, physics and mathematics, Proceedings of the 6th International Congress for the History of Chemistry (Leuven, 2008), pp.35-52.

Ana Simões, "Mulliken, Robert Sanderson," New DSB 23 (2008), 209-14.

### **Other publications National**

José Manuel Malhão Pereira, Norte dos Pilotos. Guia dos Curiosos. Um Livro de Marinharia do século XVIII (Ericeira: Mar de Letras, 2008).

Jorge Nuno Silva, João Pedro Neto, Jogos Matemáticos, jogos abstractos, (RBA, 2008).

Jorge Nuno Silva, Carlos Santos, João Pedro Neto, Jogos do Mundo, (Visão/Público, 2008), 10 vols.

Jorge Nuno Silva, Os Matemáticos Silva (Apenas, 2008).

Henrique Leitão, Lúcia de Azevedo Martins, eds., Sphaera Mundi: A Ciência na "Aula da Esfera". Manuscritos Científicos do Colégio de Santo Antão nas colecções da BNP (Lisboa: Biblioteca Nacional de Portugal, 2008), 247 pp.

Henrique Leitão, ed., Obras de Pedro Nunes, Vol. IV: De arte atque ratione nauigandi (Lisboa: Academia das Ciências de Lisboa, Fundação Calouste Gulbenkian, 2008), 805 pp.

José Manuel Malhão Pereira et al., eds., Dieta Náutica e Militar (Lisboa, Academia de Marinha, 2008). (digital).

António Costa Canas, "Tiphys Lusitano do Padre Valentim Estancel", Anais do Clube Militar Naval, 138 (2008), 203-234.

Teresa Nobre Carvalho, "O olhar abrangente de Juan Frago sobre o mundo natural exótico", Revista Oriente 19 (2008), 27-43.

Teresa Nobre Carvalho, "Conversas no interior da Índia", in Gabriela Frago, Anabela Mendes, eds., Proceedings of the International Meeting "Garcia de Orta e Alexander von Humboldt: errâncias, investigações e diálogo entre culturas" (Lisboa, Universidade Católica Editora, 2008), 165-174.

Samuel Gessner, " 'Das Sphaera Arteficial, Soblunar e Celeste': O papel dos instrumentos matemáticos nos escritos do Colégio de Santo Antão em Lisboa", in Henrique Leitão, Lúcia Martins, eds., Sphaera Mundi: A Ciência na Aula da Esfera. Manuscritos científicos do Colégio de Santo Antão nas colecções da BNP (Lisboa: Biblioteca Nacional de Portugal, 2008), p. 71-88.

Henrique Leitão, "Sphaera Mundi" in Henrique Leitão, Lúcia Martins, eds., Sphaera Mundi: A Ciência na "Aula da Esfera". Manuscritos Científicos do Colégio de Santo Antão nas colecções da BNP (Lisboa: Biblioteca Nacional de Portugal, 2008), pp. 19-23.

Henrique Leitão, "O debate cosmológico na "Aula da Esfera" do Colégio de Santo Antão", in Henrique Leitão, Lúcia Martins, eds., *Sphaera Mundi: A Ciência na "Aula da Esfera"*. Manuscritos Científicos do Colégio de Santo Antão nas colecções da BNP (Lisboa: Biblioteca Nacional de Portugal, 2008), pp. 27-44.

Henrique Leitão, "Anotações ao De arte atque ratione nauigandi", in Pedro Nunes. *Obras*, vol. IV (Lisboa: Academia das Ciências de Lisboa, Fundação Calouste Gulbenkian, 2008), pp. 515-794.

M. C. Lourenço, 2009. Fernando Bragança Gil (1927-2009). *Informação ICOM.PT 4 (II)*: 24-25.

Jorge Nuno Silva, "A Matemática na Escola e na Sociedade" in Nuno Franco, Sandra Vinagre, eds., *Actas da Escola de Verão de Matemática*, 2008, pp. 59-72.

### **Master and Ph.D. thesis completed**

PhD

Bernardo Mota, *O Estatuto da Matemática em Portugal nos Séculos XVI e XVII*, Doutoramento em Estudos de Cultura, Cultura Clássica, Universidade de Lisboa, Supervisor Henrique Leitão, Arnaldo Espírito Santo. Prize "Jeune Historien" awarded by the Académie Internationale d'Histoire des Sciences for PhD thesis

MSc

Júlia Gaspar, "A investigação no Laboratório de Física da Faculdade de Ciências de Lisboa (1929-1947)", Faculdade de Ciências da Universidade de Lisboa. Supervisor Ana Simões

Conceição Tavares, "Viagens e diálogos epistolares na construção do mundo atlântico. Albert I do Mónaco (1848-1922), Afonso Chaves (1857-1926) e a meteorologia nos Açores," Faculdade de Ciências da Universidade de Lisboa. Supervisor Ana Simões

### **Organization of conferences**

"Environmental education learning week" (Lecturer: Thomas Azwell, University of California Berkeley), Universidade Lusófona de Humanidades e Tecnologias, 26-30 May 2008. (Maria Elvira Callapez, chairperson)

"VI Encontro do Fórum Internacional de investigadores portugueses (FIIP)", 18-20 December 2008. (Maria Elvira Callapez, scientific committee).

"Jornadas do Mar 2008 — O Oceano Riqueza da Humanidade", Escola Naval, 10-14 November 2008. (António Costa Canas, organizer, Henrique Leitão, scientific committee)

"Instrumentos e a sua relação à cultura matemática coeva - da Antiguidade até aos primórdios da Idade Moderna", Faculdade de Ciências, Universidade de Lisboa, 4 July 2008. (Samuel Gessner, organizer)

"A Ciência no Colégio de Santo Antão", Biblioteca Nacional de Portugal, Lisboa, Abril 2008. (Henrique Leitão, organizer)

"Current Issues in Early Modern Cosmography", Center for History of Science, Ghent University, Ghent and Leuven (Belgium), May 2008. (Henrique Leitão, scientific committee)

"In the Light and Shadow of an Emperor. Tomás Pereira, s.j. (1645-1708), the Kangxi Emperor and the Jesuit Mission in China", Lisbon and Macau, November 2008. (Henrique Leitão, organizing and scientific committee)

XXVII Symposium of the Scientific Instrument Commission, Museum of Science of the University of Lisbon, SIC Annual Meeting 2008, 16-21 September 2008. (Marta Lourenço chairperson, Samuel Gessner, scientific committee)

Board Game Studies Colloquium XI, Museu de Ciência da Universidade de Lisboa, 23-26 April 2008 (Jorge Nuno Silva, organizing and scientific committee, Marta Lourenço, organizing committee)

3rd HoST meeting Science, Technology and the Portuguese Empire, Lisbon, 16-17 December 2008 (Ana Simões, Henrique Leitão, organizing committee)

"Stepping Back. Looking forward - 6th STEP Meeting, Istanbul," 19-21 June 2008. (Ana Simões, chairperson of scientific committee, Pedro Raposo, scientific committee)

## **Internationalization**

### Research Projects

Henrique Leitão, National representative of "Circulating Knowledge in Early Modern Science" (2006-); Correspondant International "La Mathématisation comme Problème...", Université P. Mendès France (2006-); National Representative of "Aristoteles Sinicus: The Conimbricenses in Seventeenth-Century China". Participating Institutions: MPIWG (Berlin, Germany), Emory Univ (Atlanta, USA) and CIUHCT- Pólo Lisboa.

### Publications

Besides several international publications, 1 publication with foreign colleagues

Kostas Gavroglu et al. "Science and technology in the European periphery. Some historiographical reflections", *History of Science* 46 (2008), 153-175.

### Communications

Besides communication in international meetings (32), including invited talks,

1 communication with foreign scholars

M. Granato, M.C. Lourenço 2008, "Thesaurus of Scientific Instruments in Portuguese: A collaborative project between Brazil and Portugal (poster)". SIC Annual Meeting, MCUL, 15-21 September.

Organization of international conferences or sessions (see "Organization of Conferences")

Supervision of foreign post-doctoral students

Samuel Gessner, Post Doc Grant FCT: SFRH/BPD/35072/2007.

Co-supervision of Post-Doc student Rejane Lira da Silva (May-December 2008).

#### International research networks

Several members of the Unit (senior and students) are members of the International Science and Technology in the European Periphery-STEP (<http://www.cc.uoa.gr/step/>)

#### Consultancy

Marta Lourenço, Permanent Advisor to the Centre for the History of Science, Royal Swedish Academy of Sciences, Stockholm, 2008-.

#### Editorial boards of journals

Editorial Board of HoST (<http://www.johost.eu/>)

Henrique Leitão, Consulting Editor (2007-) of Centaurus; Editorial Advisory Board (2008-) of Lias. Sources and Documents related to the Early Modern History of Ideas.

Marta Lourenço, Editorial Board of Opuscula Musealia, 2006-.

#### Internship

Pedro Raposo, 6-week research internship at National Maritime Museum - Royal Observatory, Greenwich, Aug -Sept 2008.

#### Refereeing for international journals

Refereeing for Foundations of Chemistry, Centaurus

#### Others

Membership of various international societies, including membership in various boards and participation in boards of the European Society for the History of Science, Working Party for the History of Chemistry of the EuChemSoc.