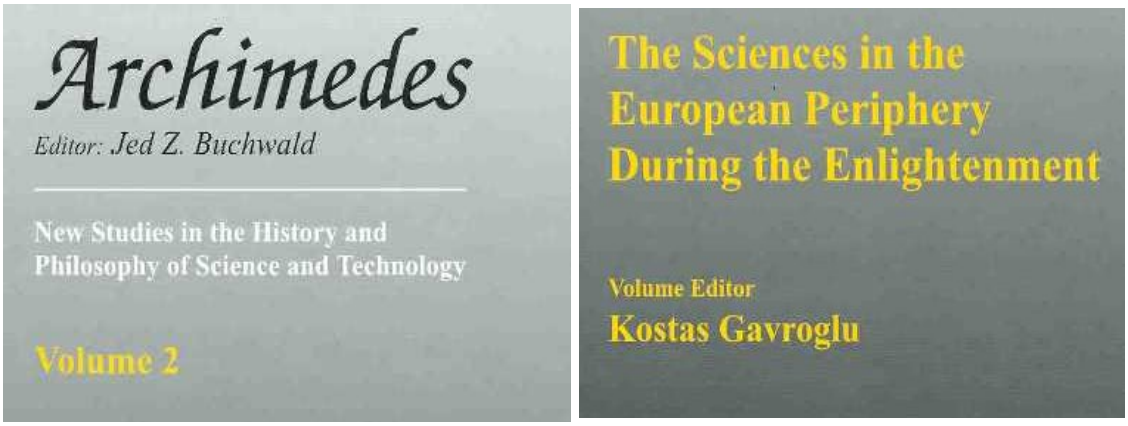

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The Preface of the Volume

This issue of **ARCHIMEDES** concerns a subject often referred to as "reception studies". The articles that follow examine particular cases of 'reception' in ways that emphasize pressing historiographical and methodological issues. Such issues arise in any consideration of the transmission and appropriation of scientific concepts and practices that originated in the several "centers" of European learning and, then, appeared (often in considerably altered guise) in regions of the European "periphery" .

Although some important work has been done on the subject, themes surrounding the transfer of new scientific ideas, the mechanisms of their introduction, and the processes of their appropriation at the periphery (including the Scandinavian countries, the Iberian Peninsula, the Balkans, and Russia) have not been studied systematically. Many such themes naturally suggest themselves. Here we will single out seven for particular notice: the ways in which the ideas of the Scientific Revolution were introduced to these countries, the particularities of their expression in each place, the specific forms of resistance encountered by these new ideas, the extent to which such expressions and resistances displayed national characteristics, the procedures through which new ways of dealing with nature were made legitimate, and, finally, the commonalities and the differences between the methods developed by scholars at the 'periphery' for handling scientific issues and those of their colleagues in the 'central' countries of Western Europe. These themes, as well as others, will frame our discussions of the complex relationship between "the original ideas of the center" and their "reception in the periphery". The articles in this volume examine a number of these issues in Portugal, Greece, Spain, Italy and the Scandinavian countries. There are, unavoidably, omissions and articles about Russia, other countries of the Balkans except Greece and, most importantly, about the Ottoman Empire

would have been absolutely essential complements to these.

Although a simple bipolar distinction between center and periphery is useful for broadly delineating the situation, it is incapable of capturing many salient details. Three factors in particular require expanding any static, bipolar conception. There are, first of all, many centers and many peripheries. Moreover depending on the subject one is discussing a place may at one and the same time be both center and periphery. A center may, over time, change into a periphery, and vice-versa. And a single country may contain both centers and peripheries, thereby making purely national distinctions of dubious use. To examine such issues requires discussing the ways in which ideas that originate in a specific cultural and historical setting are introduced into a different milieu with its own intellectual traditions as well as distinctive political and educational institutions. Any such discussion should rather emphasize the 'appropriation' than the unadorned 'transfer' of ideas. Although the concept of idea transfer can be useful and even fruitful for further research, one must always recognize that ideas are not simply transferred like, as it were, material commodities. They are always transformed in unexpected and sometimes startling ways as they are appropriated within the multiple cultural traditions of a specific society during a particular period of its history. Indeed, a major challenge for historians who examine processes of appropriation across boundaries is precisely to transcend the merely geographical, and to concentrate especially on the character of, what one might call, the "receiving culture".

Europe is presently in the throes of its most dramatic transformations since the end of the Second World War. New nations states come into being, new borders emerge, new institutions appear, and old institutions restructure themselves. Many historians and other scholars will look again at the past in the light of current changes. The work that has already been done, as well as newly available sources, combine with (comparatively) open intellectual environments and increases in funding for transnational contacts to offer an unprecedented opportunity for a critical re-examination of the historical character of European science.

One of the most intriguing challenges for historians of science, technology and medicine is to chart their own thematic atlas within this geographically expanded and culturally diverse Europe, whose present configuration provides a unique opportunity for symbiosis between established and emerging communities of historians. Members of newer communities will, hopefully, decide how to recast what have often, and for many years, been local topics in ways that can be linked to contemporary historiography of science.

Some historians in the emerging scholarly communities will certainly feel that the present moment is an opportune time to, as it were, set the record straight in respect to national contributions. This desire to bring justice to what many may consider to be their misunderstood past is, of course, a natural one and may lead to insistence on the production of biographies of scientists who, it is felt, have been unduly or unfairly neglected. Many such biographies will be interesting and significant by any standards, provided that they are not undertaken solely in the service of a local agenda.

Nevertheless, that sort of agenda must be resisted, not only because it is (at best) purely parochial, but also because in contemporary Europe historians are at a fortunate juncture that

offers an unprecedented, and perhaps fleeting, opportunity to expand the domain of problems and issues in the history of science. Consider, as only one among many such opportunities, the issues that arise in considering the European periphery during the Enlightenment. What do we mean when (as many of us do) we write here of Danish, Italian, Greek, Portuguese or Spanish science instead of the sciences as practiced in Denmark, Italy, Greece, Portugal, or Spain? Should we treat this terminological shift as one from geography to culture'? Appropriation rather than transmission may here provide a much more satisfying and finely de tailed account of the history of scientific practice during this era and in these places, and any such account will require an expansive view that moves beyond purely local agendas. The following questions point to some of the issues raised by the present volume. What has been the role of new scientific ideas, texts and popular scientific writings in forming the rhetoric concerning modernization and national identity? What scientific institutions became prevalent as power was consolidated and opposition by local scholars emerged? What were the characteristics of the prevailing mode of scientific discourse among local scholars? What was the relation between political power and scientific culture? What were the social agendas, educational policies and (in certain loot) the research policies of scientists and scholars? What shifts in ideological and political allegiances were brought about as the landscape of social hierarchy changed? What consensus and tensions appeared as disciplinary boundaries formed, especially as reflected in the establishment of new University chairs? Finally, what ideological undertones characterized the disputes, and what was their cognitive content?

Ana Simoes, Ana Carneiro and Maria Paula Diogo in their article ***Constructing Knowledge. Eighteenth Century Portugal and the New Science***, present the introduction, dissemination and consolidation of the Scientific Revolution in Portugal through the contributions in the 18th century of the estrangeirados, an informal network composed of Portuguese who for various reasons were in contact with European intellectual circles, and of the foreigners who had established themselves in Portugal. In the first half of the 18tl' century, the fate of the Scientific Revolution relied primarily on the endorsement of its ideals by individual personalities, mainly dilettanti and polymaths, who propagated the new ideas through broad but mainly private discussion sessions restricted to an Enlightened elite, and with the translation into Portuguese of some landmarks of the new sciences. A different situation arose during the reign of King Jose I, when Enlightenment ideas were embodied in legal and administrative measures of which the reform of the University of Coimbra (1772) became paradigmatic. The first textbooks written in Portuguese, up-to-date accounts of science, and critical reappraisals were published, addressing a well defined audience of students and fellow scientists. The scientific dimension of the new discourse showed a strong emphasis on the qualitative aspects of experimentation, and on the applications of science to potentially useful ends. This utilitarian approach to science was to become a constitutive dimension of Portuguese science itself. As it is typical in peripheral countries, the emphasis was not on production of knowledge but rather on reproduction and propagation of novelty.

Dimitris Dialetis, Kostas Gavroglu and Manolis Patiniotis in their ***The Sciences in the Creek Speaking Regions During the 17th and 18th Centuries. The process of appropriation and the dynamics of reception and resistance***, discuss the introduction of the new scientific ideas during the Enlightenment in the Greek speaking regions of the Ottoman Empire. They argue in favor of abandoning the notion of "transfer" and adopting the notion of "appropriation"

for the reading of the developments of this period. Their main conclusion is that the Greek scholars who introduced the new scientific ideas developed an idiosyncratic philosophical discourse which was the confluence of ancient Greek philosophy, Eastern Orthodox Christian theology and aspects of the newly emerging scientific discourse in Europe. A synthesis of elements of ancient Greek thought with Orthodox Christian tradition had already emerged by the l8th century as a strong cohesive element in the intellectual identity of the Greek nation; the legitimization of the new scientific ideas ran parallel with economic and political restructuring, both assisting in the formation of a new coherent ideology and political stand, connecting the past of the Greeks with their future prospects as independent nation. Some of the standard scientific texts written in Greek during the 18th century are, also, examined and it is suggested that the reason for the unwillingness of the scholars to initiate breaks with ancient philosophy and theology are to be sought in their overall agendas where political considerations and, especially, issues about national consciousness, were rather prominent.

Agusti Nieto-Galan in his ***The Images of Science in Modern Spain***. Rethinking the 'Polemica' comments on some of the most relevant episodes of that longstanding public controversy, commonly known today as "la polemica de la ciencia espanola". He discusses the effect that a frequent negative image of a 'weak' Spanish Science, and the resulting passionate reaction of national pride has had on the local historians of science and technology and, thus, a review of the 'polemica' may contribute to a reassessment of some traditional historiographical problems, and to a fuller understanding of the role of science and technology and their public image in Spain. Following up the 'polemica', and tracing back some episodes of the controversy about the nature of Spanish science and its image among scientists, writers and intellectuals, the paper analyzes how a tacit and recurrent inferiority complex that the Spanish felt and expressed vis-a-vis Europe influenced the scientific debate itself, and as a result, shaped the way in which the history of Spanish science has been written and transmitted to younger generations. Thus Spanish historians of science have often constructed their narratives stressing counter arguments, through a diffusionist model, accepting too easily a view of Spanish science as a mere imposition of a dominant scientific culture from the North, partially neglecting the study of the plurality of sites for creating and reproducing scientific knowledge.

Luigi Cerruti in his ***Dante's Bones.Geography and History of Italian Science, 1748-1870*** starts his paper with a number of historiographical comments concerning the notion of "Italian" as it has been used in the study of the scientific community. The second part of the paper discusses some aspects of the relationship between political power and scientific culture in Italy of mainly the 18th and 19th centuries, since such a relationship has always been a sensitive issue in the study of Italian culture. A number of questions in the history of Italian science are, then, analysed: the establishment of a 'national' academy, the start of 'national' meetings of scientists, the considerable tradition in astronomical research, and the transition from eclectic local journals to 'national' and specialised ones. There is, finally, a review of the past and present approach of Italian historiography on the way Italian science is located in the context of 'science as such', or as regards to the international 'scientific centres'. The author's conclusion is that if one looks only to the markets for goods, training and information that characterized the activities of some specialities, then Italy was a region in the periphery of these markets. If due attention is paid to the variety of scientific disciplines and specialities, then the differentiation between centre and periphery is no longer applicable in the case of Italy.

Arne Hessenbruch in his article ***The Spread of Precision Measurement in Scandinavia 1660-1800*** argues that in contrast with the Southern European periphery (the Greek part of the Ottoman empire, Portugal, Spain), 18th century Scandinavian states resembled the European centre in that they expanded their administrative machinery greatly to a large extent in order to pay for many expensive wars. One aspect of this development was the establishment of a machinery for raising taxes. This involved precision measurement: surveyors measured land which was enclosed and privatised, and most kinds of merchandise (such as grain or alcohol) were routinely evaluated at town gates for the purpose of levying a duty. Much of the activity of the national Academies of Science was aimed at providing solutions for such quantifying demands within the fiscal system.

Many of the arguments in all the papers have been further clarified and sharpened as a result of extensive linguistic interventions and other substantial comments by **Jehane Kuhn**. We thank her very much.

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