ALLEA

Annual Report 2007

Colophon

ALLEA - is the Federation of 53 Academies of Arts and Sciences in 42 European countries

ALLEA - advises her member academies, acts as a platform for her members and offers advises in the fields of science and science policy

ALLEA - strongly supports ethic ways of dealing with science, science policy and public policy in general.

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Content

Preface

Since the publication of the first Report in 2001, ALLEA has established the practice of publishing a detailed Biennial Yearbook every even year, and a more modest Annual Report every odd year. In this tradition, we herewith present the Annual Report 2007.

2007 was a very dynamic year in the European arena, and academies and ALLEA as a whole were also active. ALLEA's links with its main partners in the European and global context helped to communicate European academies' views to the wider community. The list of meetings and conferences at which ALLEA was present is an indication of the scale on which ALLEA operates.

In this publication we present only some materials from ALLEA activities; separate publications will reflect the results obtained from conferences and surveys. Consequently, in the first section, the ALLEA statement "Challenges of the Future: Reflections of ALLEA on ERA" is presented together with an essay on social sciences by Pieter Drenth. The ALLEA statement on the ERA will be continued in the analysis of the EC "Green Paper", which will be issued separately in 2008. In addition, the materials of the ALLEA conference "Emerging Regional Cooperation: SEE Academies of Sciences and Humanities in the ERA" will also be published in the Report Series.

In the second section of the Annual Report, an updated list is provided of ALLEA's member Academies, the present composition of the Steering Committee and ALLEA's two current Standing Committees.

We would like to thank all our members for their assistance in promoting academic ideas. We hope the reader finds the information useful and the views expressed of interest.

Jüri Engelbrecht
President

Johannes J.F. Schroots
Director

Section I
Papers and Presentations

Challenges of the Future: Reflections of ALLEA on ERA[#]

Jüri Engelbrecht[*]

Introduction

The European Research Area concerns the whole of society - Europe, its constituent States, the research community - and is not simply about research. New knowledge and its implementation are prerequisites for the future welfare of society. ALLEA as the European Federation of National Academies of Sciences and Humanities has gathered its members' ideas on the present and future state of the ERA.

The idea of ERA

On January 18, 2000, the European Commission adopted the Communication 'Towards a European Research Area' – an invitation to better investment in knowledge as the main tool for a better Europe as a whole, and for the European Union in particular. The Communication - COM (2000)6, 18.01.2000 – summarized the objectives and envisaged the actions needed for creating ERA. In outline, the objective was to create a knowledge society in Europe. A target of 3% of G(ross) D(omestic) P(roduct) for research and development investment in the EU is set as an indicator of progress in achieving the objectives. However, behind this target a complicated process is embedded which includes people, research structures, infrastructures, innovation, education, links between science and society, and more broadly the cultural aspect that is the attitude of Europeans towards knowledge and its implementations. The strategic goal set by the EU is to become by 2010 "the most competitive and dynamic knowledge-based economy in the world".

How far have we come? A debate on ERA, its targets and instruments is going on; many high-level expert groups have reported on the

[#] ALLEA advice on behalf of the European Commission, March 2007

[*] Jüri Engelbrecht is President of ALLEA since 2006

various stages of progress, much has been done by the Member States, by the EC and the DG Research, and European organizations. Now, at the moment of launching the FP7 for 2007 – 2013, the need to consolidate all efforts to build up ERA is obvious. This is why ALLEA asked all its member-academies to report on their opinions about the present situation and the future of ERA (see Annex).

ALLEA is the European Federation of National Academies of Sciences and Humanities. It has 53 members from 42 countries and is thus wider than the European Union. It could be said that ALLEA represents science in an 'ideal' Europe. Clearly research is breaking down walls and borders before in advance of political changes. The reflections of ALLEA on ERA are collected below.

Knowledge-based society

Although the notion 'knowledge-based society' is nowadays widely used in politics, in economics, in society, etc., its interpretation may vary and may cause misunderstandings. Such a situation arises not from a lack of interpretative agreement but from the wide context and fast-changing world. Instead of seeking a short definition, it is better to list the ideal characteristics of the knowledge-based society:

- knowledge is a prerequisite for the quality of life and welfare of society;
- knowledge is based on good education and well-organized research structures;
- knowledge is disseminated fast and there are equal possibilities for everyone to obtain information;
- links between academia, society, industry and government are well-organized;
- a knowledge-based economy uses all the potential of scientists and scholars, engineers and other specialists;
- innovation is encouraged at every level including industry-academia collaboration, social welfare, fiscal incentives, etc.;
- knowledge is a basis for policy decisions in society;
- dialogue between science and society is promoted.

Does the construction of ERA bring us closer to these characteristics? The constituent States of Europe and the EC in particular are responsible for creating the conditions for research, education, innovation, and knowledge management in order to enhance public and private partnerships for creating a knowledge-based Europe: the Europe of knowledge.

Progress towards ERA

Despite the efforts made, the general target of 3% of GDP for research and development investment in EU27 is an aspirational one, and will not be easy to reach. Present estimates show that by 2010 the target clearly cannot be reached, although today's level – about 2% - will be exceeded. In preparing the FP7, the EC has made definite progress, not least in increasing the FP7 budget. The agreement says that "EU funding for research should be increased such that by 2013 the resources available are around 75% higher in real terms than in 2006"; sadly, the outcome so far does not match the aspirations.

So the present situation is not what we would have liked when the idea of ERA was formulated in 2000. Given all the constraints, FP7 is a good step forward. The keywords for FP7 are: excellence, coherence, and simplification – ALLEA definitely agrees with those. In terms of excellence, launching the European Research Council – 'the first pan-European funding agency for frontier research' – is the most important step taken by the EC in this direction. The scientific community approves the mission and the strategy of the ERC and has high hopes for the future of frontier research in Europe. The recent Aho[1] Report 'Creating an Innovative Europe' has listed the challenges for the EU in that direction: innovation-friendly market conditions, mobility and key technology sectors. However, all recent debates and analyses indicate the presence of many bottlenecks, among them the shortage of trained people, of infrastructure for research, and a need for more coherent R&D policies across the Member States. It seems also that more attention should be given to the societal dimension and a culture of innovation rather than to utilitarian policy measures. One reason for the relative lack of progress towards planned goals, according to Academies, is the fact that the influence of the process of globalisation was not taken

[1] Esko Aho is former Prime Minister of Finland, 1991 – 1995.

fully into account when the strategy of ERA was designed. There is further some danger that bureaucratic processes, both local and at European level, will hinder progress towards intensified scientific collaboration across Europe.

ALLEA and the creation of ERA

What has been done

Creating ERA is a challenge to the scientific community, universities and/or research organisations, and governments – indeed to everybody who cares about knowledge and about creating, preserving and using it. ALLEA as the European Federation of Academies of Sciences and Humanities sees its role as being to unite and strengthen the voice of Academies, a voice which is clearly very positive in its response to ERA. Since its launching in 1994, ALLEA's activities have been increasingly focused on uniting the academic spirit and stressing the universal values of science. The foundation stones of ERA laid by ALLEA are reflected in publications and statements (see also Publications, p. 69):

- Basic research in society (1996)
- Research training and higher education in Europe (1996)
- European science and scientists between freedom and responsibility (1999)
- History of science and technology in educational training in Europe (2000)
- Science, society and culture: advice to the EC concerning the concept of the 6FP (2001)
- Quality in science (2002)
- National strategies of research in smaller European countries (2002)
- Privacy protection in the information society (2002)
- Memorandum on scientific integrity (2003)
- Evaluating for science (2004)
- Investing in knowledge in Europe: reflection of ALLEA on the proposals of the 7FP (2005)
- In search of common values in the European Research Area (2006)

In particular, ALLEA has responded to the Communication on ERA with a letter where the following was stressed:

- ALLEA supports the general idea of ERA, and its ambitious and laudable objectives;
- ALLEA is in agreement with maintaining and developing a variety of policies to cater for the wide diversity in the EU. In this context national strategies will also vary owing to the different constraints in Member States;
- ALLEA shares the concern about the declining attractiveness of natural sciences and engineering for young people. Consideration should be given to measures for raising interest in the sciences at an early age, for stimulating more women to pursue their careers in science, for promoting networks of excellence, for abolishing the formal and legal obstacles to mobility, for encouraging flexible retirement, investment in infrastructures, for creating conditions to enable science-driven basic research, and for paying more attention to the public and social responsibility of scientists;
- ALLEA fully endorses the measures for improving the EU intellectual property rights legal framework.

ALLEA has also addressed the European Convention on the importance of knowledge in society. Clearly economic prosperity and other 21st-century values can only be achieved in the context of the development of a knowledge-based society.

The ALLEA Working Group on the National Strategies of Smaller European Countries formulated several recommendations (2002) that are closely in line with the ideas of FP7:

- not only increasing the funding of R&D in general but channelling it to the most prospective areas;
- not only introducing incentives for encouraging innovation per se but creating foresight programmes and formulating National Development Plans;
- not only introducing incentives for stimulating young people in S&T but estimating the long-term needs for manpower in academia and society at large;
- not only stimulating peer-reviewed research but creating centres of excellence in research and supporting the formation of collaborative international clusters;

- not only improving research infrastructures but combining them with education and innovation.

What should now be done

According to the European Academies, the scientific community approves and supports the general notion of ERA. Of the single schemes involved in the development of ERA, the role of the Marie Curie Programmes in particular has been valued by many Academies. In moving further towards ERA, the Academies stress that all stakeholders must employ their best efforts to ensure that the momentum of progress is maintained, but equally that it is essential to share information to ensure that needless duplication does not take place. Many Academies explicitly include the way forward to ERA among their objectives and have long promoted international co-operation. The Royal Netherlands Academy of Arts and Sciences (KNAW), for example, stresses the need "to help overcome the fragmentation of efforts in the European and broader international S&T landscapes". This is a key problem in the construction of ERA, where well-designed instruments and multilateral initiatives within the EU and worldwide should form the basis for excellence in research and science-society links. But this can only effectively be achieved if there is more cooperation between nations and their Academies. In this context, the Academies welcome the proposed simplification of the procedures of FP7 as a contribution to facilitating and stimulating collaboration, but certain Academies believe that cooperation is more likely to be effective when it stems from the individual researcher or team ('bottom up') then when it is proposed from above ('top down') in the form of prescribed projects or themes.

In general, the vitality of European research is a key factor for the future of the European economy. ERA recognises this, and aims to encompass all European research activity, not just those projects led by the Commission. But this recognition now needs to 'filter down', so that it guides policies and funding arrangements at European, Member State, regional, local and even institutional levels.

In pursuit of this aim, several Academy initiatives at regional level deserve mention. In South East Europe (SEE) a regional Inter-academy Council has been formed to help to coordinate research in the region. The Vyshehrad Academies in Central Europe and the Nordic-Baltic Academies have formed networks for generating joint projects and

formulating concerted opinions. The French Academy of Sciences has recently launched a series of initiatives aimed (i) at developing novel education strategies to improve the overall qualification of managerial scientific and technical staff in emerging countries, and (ii) at promoting the quality of public scientific information by bringing together scientists, journalists, civil society representatives and consumer associations on matters of current concern (nanotechnologies, genetic modified organisms (GMO's) , stem cells, etc.).

The creation of regional or sub-regional networks of academies would allow the organisation of a series of workshops and inter-academy summer universities which could significantly contribute to strengthening the role of Academies in the building of the European Research Area.

Academies are increasingly aware that our partners worldwide see European S&T as still fragmented, and are taking steps to remedy this. Thus a Consortium of Academies has started to cooperate with NASAC in the running of series of high-level conferences between Europe and Africa. ALLEA and NASAC have also signed a Memorandum of co-operation. Academies are also active in ERA-NET CO-REACH for coordinating European bilateral programmes of research with China.

In its concern with research, ERA is closely bound up with education and innovation. Academies do not feel that the links between academia, education and innovation are sufficiently well developed:

- Basic research is a prime concern for Academies, and one in which the future role of the ERC is of great importance.
- In the domain of education up to and including undergraduate studies, most Academies play no direct role, but many are aware of the need to play a stronger part in enhancing post-graduate education and promoting the mobility and exchange of scientists. In this respect members of the Academies have a responsibility as mentors and educators to transfer their knowledge, to create schools of thought, to train - and inspire - the next generation. These should all be key actions for the future, reinforced by the co-ordination and streamlining of European education systems, with a view to achieving greater integration of research efforts and capacities in ERA. There is one further respect in which Academies are also involved in education, and that is in promoting the understanding of science

in society. This is a key function, and needs to be assumed by all the stakeholders.

- As far as innovation is concerned, it is important not to overstress the distinction between pure and applied science; besides which, Academies stress the importance of achieving balance between the exact sciences and technology on the one side, and humanities and social sciences on the other. This balance seems to be even more important for (new) Member States in Central and Eastern Europe in order to overcome distortions which have arisen in the recent past. The perception that Europe has been falling behind other world economies in innovation is shared by a number of Academies. To counter this, Academies have a significant role to play, as an extension of their educative role, in ensuring that the results of research are widely disseminated.
- Innovation clearly requires a well-defined infrastructure and instruments. It also needs clear rules for Intellectual Property Rights (IPR) and patenting. The ALLEA Standing Committee on IPR has been active in this field and has formulated several proposals. On behalf of ALLEA the Standing Committee has on several occasions advised the European Commission on adapting the Database Directive for the benefit of scientific research, *e.g.* by liberalizing access to databases and granting scientific use of material within databases. The Standing Committee on IPR has also stressed the need to simplify the European Patent system and advocates the implementation of a Community Patent.
- Last but not least – Academies and ALLEA as a whole deal with fundamental ethical issues and the responsibility of scientists. These problems are even more important within the framework of global challenges. The recent ALLEA conference in 2005 (see: Publications, p. 70) proposed a programme for an ethics agenda for the future. In addition, Academies feel that ethics should be regarded as a part of a professional education.

Active partnerships between science and society, and principally between the scientists and academics who conduct research, the commercial and industrial bodies that exploit it, and all those members of society who benefit from it, are seen by Academies as the most effective way of strengthening the ERA and indeed Europe itself. The ALLEA Working Group on Science and Media, initiated by the Royal Flemish

Academy of Sciences and Arts, has set out proposals aiming (i) to interest young people in science and (ii) to inform the public at large about science more widely. If these goals are to be realised, closer co-operation between academia, the worlds of education and industry, and the media, is essential. The recent EC project 'Messenger' presents valuable guidelines in this direction. It is in this context that ALLEA also collaborates actively in the European Science Open Fora, organised by EuroScience, which is proving to be an effective instrument for the dissemination of knowledge to society and the media.

Final remarks

ALLEA agrees with its partners (Workshop 'European Organisations on Cooperation in the ERA', The Hague, 15.12.2006) on possible actions, which in turn provide principles underpinning progress towards a knowledge-based society:

- only a world-class research environment can guarantee progress towards the goals of Lisbon and Barcelona;
- there is a need for a political will to develop ERA but this will must be fed by the community;
- education at all levels including that of policy-makers plays an important role;
- the self-organization of research communities should be encouraged;
- for scientists, sustainable career-paths are important, and should include return, promotion, open opportunities, etc;
- in the competitive and dynamic world, research organizations should clearly define (and redefine, if necessary) their role and targets;
- regional partnerships should be strengthened by clusters of European and worldwide co-operation;
- the effectiveness of programmes should be enhanced with attention to their 'pulling' effects;
- attention should be focused on dismantling the barriers in research (barriers between the Member States, different schemes, etc);
- public and private partnership in funding schemes and joint programmes should be supported.

The ALLEA statements and analyses (1996-2006) are mostly on the 'soft' side of research – basic values in science, responsibility of scientists, codes of conduct and ethics of science, intellectual property rights, co-operation between academies, principles for national strategies of research, quality of research, etc. These are the problems on which the voice of Academies is united, regardless of their history, economic situation and cultural differences. The independence and autonomy of Academies make them unique stakeholders in society, and gives them the ability to act as think-tanks in shaping national strategies for achieving the aims of the ERA. The strategic partnership of Academies and ALLEA as a whole with other research organisations in Europe is one of the academic cornerstones of the ERA. In particular ALLEA has collaborated closely with EASAC and EuroCASE, which have tackled particular 'science for policy' issues, while ALLEA has focused on issues of 'policy for science'. But more can be done: a number of Academies stress the need for new cooperative research in key areas such as climate change, energy sources, genetic sciences, etc.

The immediate challenges posed by FP7 and the ERC are exciting, but ALLEA also urges a longer perspective for reflection. Those born today – future Europeans – will live in the Europe of 2050. What will Europe be like then? "It is very difficult to make an accurate prediction, especially about the future", according to Niels Bohr. If we cannot predict, we should nonetheless do everything to determine the road to the future, and this too is a major concern of ALLEA. The Academies should continue to advise their national governments on appropriate policies for research and teaching; ALLEA must ensure that their united voice is also heard by the European Commission, and in the wider counsels of our emerging global village.

ANNEX
Qualitative Analysis of the ALLEA | ERA Survey

Q 1: Are you pleased with the idea and targets of ERA?

- In general, the respondents are pleased with the ERA project
- The target of 3 % of GDP is clearly aspirational, but rather unrealistic
- Balance between basic and applied science should be strived for. Emphasis too much on utilitarian policy measures
- The field is still very fragmented, which ALLEA should help to overcome
- ERA is more than the EU or EC and a major challenge in terms of the development of European collaboration.

Q 2: Have Academies and ALLEA as a whole helped creating the ERA?

- In general, European Academies have long promoted international co-operation, but have – with exceptions - not been extremely pro-active in terms of helping to build the ERA
- Comparatively, ALLEA is still young but has the potential to form the platform *par excellence* to represent the voice of Academies, using the existing networks of co-operation
- Presidents of ALLEA – past and present – have participated actively in ERA debates and related initiatives of the European Commission. Such activities lend credibility to all Academies.
- So far, ALLEA has issued a number of useful statements and position papers, of importance for ERA.

Q 3: What contribution has your Academy made to ERA?

- By creating clear political commitment, academic research has achieved greater importance. Through a system of scholarships greater mobility of researchers and international coordination is encouraged.
- Contributions through participation in several projects, *e.g.,* Science Generation, and organization of Brussels' seminars, *e.g*., Shaping the future of Information Technology
- Contributions via European scientific co-operation, policy inputs (*e.g.* ERC), and advice government on education and research policy.
- Contribution via initiation and coordination of the CO-REACH ERA-NET

- Organization of regional conferences, *e.g*., SEE
- Network of contacts with Europe, regularly used to support and promote international collaboration
- Through its funding role, the Academy contributes to European collaborative research
- Policy input, *e.g. re* European Research Council
- CO-REACH and ERANET
- Participation in working groups and advisory bodies; Researcher's mobility; Funding and operation of scientific exchange programs, Participation in ERA-MORE; Awareness campaigns, Regrouping EU support and national funding, Partner in ERA-NET Complexity

Q 4: Are you satisfied with the progress of ERA?

- In general, Academies are satisfied, but there are also caveats: don't force the pace on such developments, or be discouraged when aspirational targets are not met
- Some progress has been made, mainly at the practical levels of cooperation and collaboration between national funding organizations and policy convergence between member states.
- However, partners, outside of Europe, still look at European S&T as a fragmented area, characterized on the whole by complex and bureaucratic procedures.
- When ERA started globalization was not taken into account
- It may be vital to have much more political support at a very high level: real governmental promotion of the ideals and practicalities of the ERA and a willingness to make national changes for the benefit of a European whole

Q 5: What is the role of education in ERA?

- In general, education is not the area on which ERA is aiming. Nevertheless, at the higher education level, research and teaching are intimately connected, and have to be taken into account when considering the overall structure and funding of European research.
- Important issues are: international student/professor mobility; need for a highly skilled workforce; (post)doctoral studies crucial for successful development of ERA; early development of European networks for doctoral students, for example, via summer schools, seminars, conferences, etc.

- Good-quality university education is an obligatory precondition for later successful research; the internationalization of higher education is an ongoing process and its role in ERA needs hardly any discussion, unless it is underestimated by some stakeholders.

Q 6: What are the weak links in the triangle: Academy – Innovation - Education

- In general, the Academy sees its role first and foremost in the promotion of basic sciences, and to a lesser degree in the evaluation and stimulation of potential application of technological innovations. However, the distinction between basic and applied science is rather artificial and will slowly fade away.
- Weak links are: Academy – Innovation (but see above); the greying of most Academies (for which there is no simple solution); the not very dynamic character of European business;
- Examples of strengthening weak links: development of resources for research collaborations between universities and SMEs; greater dissemination of the outcomes of research; greater communication of the importance of scholarship and science, with a view to feeding into both innovation and education.

Q 7: What could Academies and/or ALLEA do for the ERA in coming years?

- Participation in the evaluation of FP7 results and further development of the coordination of R&D in Europe.
- Strengthen the national interest for European collaboration
- Advise the Commission and national governments on policies for research and teaching policies
- Active collaboration with the ERC
- Promote collaborative research oriented towards the development of a European knowledge society
- Advise European policymakers about the gaps and pitfalls in ERA
- Enhance studies leading to progressive balance between fields of the sciences & technology on the one hand, and studies of culture, including humanities, social sciences and history on the other
- Develop ERC into a strong funding agency like NSF/NIH in the US
- Promote integration of South-Eastern and Eastern European Academies into ERA

- Strengthen fundamental and frontier research, cooperation in research on: climate evolution and energy sources – biological and genetic sciences
- Encourage academies to work together, preferably via bottom up approach instead of top down programmes and plans
- Provide advice to pan European organizations and ensure that ALLEA's voice is heard regularly in Europe on European and wider international issues
- Academies can act as think tanks in shaping national strategies for achieving the aims of the ERA. ALLEA could focus the Academies and provide a forum for various scenarios and formulating common strategies, also identifying the best practices in moving towards the common aims.

Q 8: Any other comments, Academy statements, etc.

- Put knowledge into practice
- ERA (some add innovation to the acronym: ERIA) is not only a formal mechanism, but also pointing at cooperation in general with partners in other European member states and European organizations as well
- The ERA is an extremely important concept in encouraging the development of a European single unit – not in the sense of all being a single country, but in having coherent integration of national systems. Fragmentation is a major problem, and linguistic differences tend to increase the likelihood of this. Academics and scientists do work together already, in a wide range of ways; but much more needs to be done to break down both national barriers (between institutions within a country) and international ones (between different countries). The ERANET programme has been criticized by scientists for putting money into administration rather than research, but without a much closer integration of national systems it is hard to see how the ERA ideal can be achieved.

Social Sciences: Truthful or Useful?[#]

Pieter J.D.Drenth[*]

Preamble

The theme of this conference is the 'Unity of Science'. Let me explicitate how I interpret this interesting motto. For me this does not mean that there is one *regina scientiarum* that domineers over the other fields of science and learning; a role that was allotted to theology in the old times, and that nowadays - in a more secular vein – is claimed by physics at times. In my view the notion 'unity of science' rather refers to 'communality within diversity'. Disciplines vary in content, issues and methods. But there are also quite some common objectives, interests and concerns, the most important of which may be the common goal of searching for testable truth with objective and independent evidence. The communalities render it possible, or even imperative, to communicate and to cooperate. The diversity implies complementarity and calls for interdisciplinarity in the study of the many to-day's complex phenomena in science and society.

Introduction

Modern societies are facing striking and often disturbing changes and challenges. The internationalisation of political strategies, the globalisation of industry and trade, national populations' increasing heterogeneity and the problematic effects this has on minorities and on social cohesion, are only some of them. Further, they have to cope with demographic changes, particularly with respect to the (future) age distribution. Not only will this have an effect on the country's economy, and on tax and insurance policies, there will also be an increasing demand for *education permanente*, for suitable employment for older workers, and for proper care for elderly people who will increasingly require (often advanced) medical services. Simultaneously, lifestyles will change with different modes and schedules of working being required besides an

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[*] Past President (2000 – 2006) and Honorary President of ALLEA

[#] Address to the IAP Conference 'The Unity of Science', Alexandria, Dec.1-3, 2006.

increasing need for leisure activities and travel….. This list can be extended with many other developments in society and in the lives of individual citizens.

Moreover, a modern society depends, more than ever, on the advancement of knowledge. Modern society has become a knowledge society. And this particularly concerns scientific knowledge. In the post-industrial knowledge society, it is especially *scientific* knowledge that has become a salient factor in economical production (see also SWR, 2006). The European Commission has also adopted the view that knowledge is Europe's richest resource and that supporting it will be an important incentive for Europe's further cultural and economic development (as stated in the proposal for the 7th Framework Programme (EC, 2005)). By promoting the European Research Area, this intensified production of knowledge and the development of high quality technology are recognized as crucial for a nation's economic survival. But technological innovation is only successful in a society that is susceptible to such changes, or, to put it in another way, if the human and social factors are sufficiently identified and recognized. Therefore, it can be argued that insight into knowledge acquisition and production's processes and the societal factors that further or impede this knowledge's implementation for technological and industrial innovation is vital for the support of a knowledge-intensive society, and, therefore, that the social sciences are indispensable in this respect.

Let us first attempt to briefly define the content and to demarcate the domain of what has cursorily been referred to as 'social sciences' in the above.

Definition

One of the first attempts to systematically differentiate within the world of sciences was William Craxton's (1483) suggestion to distinguish two kinds of learning: the study of divinity and the study of humanity, thus obviously trying to separate the supra-natural and the natural. Some hundred years later, Bacon made one further differentiation with his proposal to distinguish between natural and human philosophy, besides 'divine' philosophy.

Natural philosophy has developed into the multiplicity of disciplines that we now find under the heading 'natural sciences', or, more specifi-

cally, natural and life sciences. The latter distinction was strongly endorsed by Dawkins (1986) who argued that since dead objects are, in his view, principally different from living objects, we need two kinds of sciences to study these objects: Physics as the science of the dead, and biology as the science of living things.

With the diminution of theology's predominance in the 19th century, 'divine' and 'human' philosophy later merged into what is called 'humanities' in the Anglo-Saxon tradition, 'letters' in some other cultures and, following Dilthey's (1883) proposal, *Geisteswissenschaften* in the German language area. This category encompasses a range of disciplines, including Classics, History and Archaeology, Linguistics, Arts and Literature, Philosophy and Theology.

The natural sciences have developed a strong experimental/empirical, or *nomothetical,* methodology that distinguishes them from the humanities' more descriptive, understanding (Verstehen), hermeneutic, or *ideographic* approach. According to Snow (1959), these different orientations have, even developed into two separate, in fact, opposed cultures: the alpha (humanities) and the beta (natural sciences) culture.

At the end of the 19th century, a third player, designated by the term 'gamma sciences', entered the arena. In addition to the study of nature and culture, the behaviour of human beings regarding their relation to their social environment now became the object of study. The nature and development of human cognitive and emotional functions, individuals' interactions with other individuals and with their social environment, social systems' structure and dynamics (family, groups, communities and society at large), social systems' functioning with regard to cultural, constitutional, economic and socio/political aspects, all became the object of scientific analysis in various emerging (main) disciplines: psychology, sociology, economics and political science. The further secession of sub-disciplines, such as demography, criminology, cultural anthropology, education studies, management studies and others, occurred in the course of the time.

Within this gamma-science domain (in our discourse indicated as social sciences), three relatively separate main streams can be distinguished. Firstly the *behavioural sciences*. They deal with intra- and inter-individual behaviour, focusing on the individual. Psychology, pedagogic, and educational sciences belong to this category. Then there is the group of social sciences that concentrates on the informal and

formal social relations between people and the societal institutions in which they are embedded: sociology, cultural anthropology, and political sciences. We call these *societal sciences*. And, in the third place, there is the group of sciences that deals with the production of wealth, the consumption of commodities and the management of states and private enterprises' income and expenditures, the *economic sciences*. These include macro- en microeconomics, econometrics, operational research and management.

In what respect are we dealing with a new and separate scientific domain, and can we speak of a 'third culture' as, for instance, Lepenies (1985) does? What typifies the social sciences?

In the first place it is, of course, the content of these sciences. As indicated, a variety of problems and issues are studied within the social science disciplines, but a common denominator is their focus on the functioning of the human being as a social creature. Social sciences study the nature of human beings and their behaviour, and the way people live together in an informal or institutionalised form. The human element is important here, and renders social sciences distinct from natural sciences and life sciences. The study of human beings and human social structures does not only deal with Dawkins' 'living things' of biology as opposed to the 'dead things' of physics, but with living things that have motives, intentions, norms and values, and whose social institutions have meanings, symbols, rules and rituals, all of which are not directly measurable, but have to be inferred from observables. Moreover, human beings and their social structures' developments, changes and dynamics are not only caused by external or internal determinable factors, but are also products of their own wilful influence, often being illogical, inconsistent and unpredictable. Social sciences are, nevertheless, empirical sciences, studying observable phenomena with empirical methods, but their insights are more probabilistic than deterministic. This is probably why the physicist Kresh once humorously stated that understanding atomic physics is child's play compared with understanding child's play.

Secondly - and related to the first point - social scientists use a diversity of methods, encompassing both nomothetic and ideographic approaches, for their research. Some disciplines, particularly the greater part of psychology (experimental psychology, testing and scaling, and cognition studies) and a significant part of sociology (empirical sociology), and economics (econometrics, and operations research) resemble

'natural sciences' as far as their use of mathematical techniques and, with respect to empirical issues, their rigorous 'Popperian' methodology are concerned. Other parts of social sciences lean towards the humanities in their descriptive, interpretative and sometimes even hermeneutic approach. Clinical psychology, cultural anthropology and social studies that explore cultural symbols, values and meanings, and dynamic social change processes are cases in point. Often a combination of the two methodological approaches produces the richest insights.

Thirdly, the social sciences deal with a reality to which non-scientists too have access. Journalists, novelists, poets, radio and television producers, even gossiping neighbours speak and write about human motives, desires, needs, and about social and economic factors, structures, and developments, often using the same words and concepts as social scientists do. Non-scientists have common sense, experience and tacit knowledge that are not always easily distinguished from scientific social science knowledge. Consequently, it is sometimes difficult for social scientists to clearly demarcate scientific from pre-scientific knowledge, and to convince the general public that knowledge that is embedded in a sound theoretical framework and is evidence based, does have an advantage over the layman's pre-scientific knowledge.

Fourthly, there is often a close relationship between social sciences and societal policy. Social science researchers generally maintain strong ties with politics, governments and/or industry. In many countries, we find that a Social Planning Bureau, or a similar institute that offers national or local governments authoritative advice on social policies, are staffed with social scientists. The majority of psychologists go into practice in a clinical, developmental or industrial setting. Economists are favoured employees in industry, banks and other commercial institutes. In many reconnaissance studies and priority programmes in social sciences, we see an emphasis on applied, or, at best, strategic themes. In other words, social sciences are thought to have a close affiliation with practical utilization and policy making, and many of the research programmes in the social sciences show a strong inclination towards social relevance. It is exactly this last aspect of social sciences that will be the subject of further discussion in this paper.

Social sciences as applied sciences?

As we have seen social scientists find themselves, probably more than other scientists, in the field of tension between the requirement of finding the scientific truth and that of producing societal relevant insights, between truthfulness and usefulness. Let us take a closer look at this issue. The distinction pure or basic science versus applied science has been a major topic of discussion among science philosophers ever since Francis Bacon, in his book *Novum Organon*, asserted that science is only relevant if it aims at societal progress, practical application and human control over nature. Opponents maintain that science should be autonomous and should follow its own laws and standards with only one criterion: veracity. Concessions to practical applicability lead to corruption, and, eventually, destruction of science. The difference between basic and applied social sciences has even been defended as being rooted in a totally different epistemological tradition: the basic tradition, concerned with scrutinising the essence of things, can be traced to the ontological tradition of Plato's ideas, whereas the applied tradition stems from everyday common-sense principles and rules as practiced in the advisory tradition of Aristotle's politics (cf. Schönpflug, 1993).

At present science theorists take a different position. In the first place, the distinction between basic and applied research is much less clear-cut than has often been suggested. There is a great deal of overlap between the two spheres, and many emerging science and technology fields (for instance information and cognitive sciences, nanoscience and –technology, and bioscience and –technology) contain substantial elements of both. It is increasingly difficult to identify parts of sciences that do not affect technology, or that are not themselves affected by technology. EuroScience President Connerade once stated that there are only two types of science: applied and not yet applied science.

In this light, we concur with a proposal by the European Commission's expert group on 'Maximising the wider benefits of competitive basic research funding at European level'. In its recent report *Frontier Research: The European Challenge* (EC, 2005b), the group preferred the term 'frontier research' to the term basic research, to reflect research that creates new knowledge and develops new understanding. The group further rejects the traditional distinction between 'basic' en 'applied' research which implies that research can be either one or the

other, but not both. Researchers engaged in frontier research may well simultaneously be concerned with producing new knowledge and with generating potentially useful knowledge.

In the second place, we should not confine ourselves to a strict dichotomy of basic science versus applied science. There are different nuances and modifications with respect to the criterion of veracity versus utility, even within the type of research in which veracity remains the main determining norm. Let us have a closer look at the spectrum between pure and utilised research.

- Firstly we distinguish *pure, science-driven* research. Science always starts with curiosity, the wish to know the causes of and reasons for observables, and the desire to find an explanation for that which is not yet understood. In pure and science-driven research, these unanswered questions present themselves through experimentation, reflection and scientific discussions; they are science generated and conclusion oriented. It is clear that the primary fruits of this pure research are augmentation and enrichment of our knowledge. As such, we deal with an independent and indisputable value of science - its intrinsic relevance. Fundamental research, be it in physics, biology or psychology, augments the general body of knowledge, which is an intrinsically valuable and precious quality of civilisation, and an essential condition for the creation of the next generation of scientists. Through its scientific enlightenment of the general public - and this is especially true in respect of the dispersion of social science knowledge – it can further be regarded as an important instrument with which to develop and strengthen a society's intellectual defensibility and democratic foundation.
- Secondly, there is what the OECD Frascati manual describes as *fundamental strategic* research. This definition refers to pure research, which is, nevertheless, directed towards problems that have been selected by policymakers as deserving high priority because of their political or societal saliency. This often occurs in the case of scarce resources (such as the setting of research priorities in developing or other economically less advantaged countries), or when there is strong political pressure for 'relevant' research) to be done.

An example of the latter is the European Commission's allocation of the research funding in the first six 5-year Framework Programmes. Most of the FP-supported research was 'targeted' research; it always had to fall within the chosen priority fields. Only the seventh Frame-

work Programme (to be commenced in 2007), which introduces the European Research Council (ERC), allows a modest part of the funds to be allocated to science-driven, cutting-edge research without a further prioritising of themes or subject areas.
- Thirdly, there is *practicable, science-driven* research. As the wording indicates, one is again concerned with science-driven research, but in this case, with research whose results will sooner or later (in a great many cases rather later) lead to important applications or innovations in the practical professional field. Many disciplines provide striking examples of theoretical work's practical 'usefulness', although, as mentioned, it often took considerable time for some discoveries to reach the practical application stage. Maxwell's groundwork on the transmission of electronic waves, resulting in Marconi's telegraph some decades later; the development of the early fundamental Radon theory that lead to the later computer topography; 1920s polymer chemistry resulting in a booming plastic industry from the 40s onward; fundamental physiological research that lead to significant and innovative pharmaceutical remedies; the invention of the transistor principle finding its use in the semiconductor area, and – a striking recent example - a few CERN physicists developing a device with which to exchange large data files, thus sowing the seeds of the World Wide Web and bringing about the information and communication branch's enormous prosperity …. they are all significant cases in point. By the way, this has been an important argument for many European research organisations, including All European Academies (see ALLEA, 2005) in respect of defending and promoting basic research in European research programmes. Europe's economic and social future depends on the careful development and exploitation and, in particular, innovation of its knowledge base. Innovation in a knowledge economy requires new knowledge, and this new knowledge is specifically generated by cutting-edge, science-driven research.

It is not difficult to identify a great number of theoretical contributions to the social sciences that were eventually translated into prolific applications. A few are the importance of learning theory for the advancement of didactic and educational practices, the use of experimental research on perception and attention for ergonomic applications in industry, traffic and marketing, the contribution of theoretical work in decision theory and risk analysis to industrial and governmental decisions, the usefulness of economic modelling for monetary policies, and

that of the fundamental work on stereotyping and prejudice for dealing with minorities and migrants. These examples can easily be supplemented with numerous others. The point is that the researcher's primary intention is not the development of an instrument or the solution of a practical problem, but the advancement and augmentation of the knowledge of social behaviour through empirical and theoretical analysis. At the same time, this knowledge is utilised by the researcher him/herself or others at a later stage, and converted into practical applications.

- Fourthly, we can identify *problem-driven / product-oriented* research. The motivating force behind this type of research is not primarily theoretical interest or scientific curiosity, but the need to solve a practical problem or to develop a useful product. This type of research is usually referred to as 'applied research'.

Various types of 'applied research' fall within this category, including:

- instrumental research oriented towards the development of instruments (for diagnosis, analysis, assessment);
- research aimed at the manufacture of products (drugs, tools, services);
- research on intervention methods for individuals or groups (development and evaluation of psychotherapy, organisational development, conflict prevention, community building);
- research on (the optimisation of) procedures and processes (decision making, sales, social cohesion).

I would like to make two observations with respect to this category of research. First a methodological one: although both the origin and the objective of this type of research may stem from the need to solve a practical problem or to produce a useful method or instrument, instead of theoretical curiosity, there is nothing reprehensible about the research process itself. It follows the same rules and standards as basic research: questions are posed and the design is planned in an unbiased way, hypotheses are tested with objective data, the analysis and interpretation is 'value free' in the sense that no interests, power or external (*e.g.* financial) pressures should play a role. Standards are explicitness, testability, and replicability.

Secondly, applied research could also lead to generalisable laws and relationships, and therefore contribute to the augmentation of the scien-

tific knowledge. In fact, a great deal of what is now known about causes of individual behaviour or social processes is the product of applied research in behavioural, societal or economic science.

In other words, in principle there is nothing inferior about applied science, neither in terms of quality and methods, nor in terms of its contribution to the body of knowledge. Only its origin and its goal are different: it is problem induced and solution oriented.

- Fifthly, there is *auxiliary* research, research that is meant to be supportive in respect of policy and decision-making. The contribution can be solicited in different phases of decision-making. In the first phase, the initiating phase, research may generate or help to identify the problem that needs attention. Survey research may reveal citizens' dissatisfaction, dangerous or risky procedures or rules, discrimination or injustice in the treatment of citizens, unsatisfactory working or living conditions, and the like. This may contribute to properly defining the question to be addressed. In the second phase, the search for alternatives, research may help to ascertain various options under consideration's chances of success and unwanted side effects. In the third phase, the finalisation, the researcher may assist the decision maker by calculating possible amendments' or adaptations' effects by using a research-based simulation model, or a computer support system that can easily incorporate parameters changes. In the fourth phase, in which the implementation takes place, the researcher may assist by, for example, identifying possible causes for resistance to change, as well as by providing an evaluation and follow-up studies.

The social scientist working in this context can still be operating within the boundaries of scientific activities based on finding the truth. Although auxiliary researchers as described above could be tempted to select biased information and agreeable alternatives, it helps the decision maker more by providing objective and correct rather than pleasing information. It is my firm belief that if (applied) scientists start to compromise the truth, if research becomes politicised and the norms of veracity are infringed, their input will lose its independent contribution, and will eventually become useless.

The danger of violating the truth is even greater in another form of auxiliary research, namely when research results are solicited as ammunition for a discussion or a political debate, whether to attack or defend a certain position, or to create negative or positive attitudes with respect to certain ideas or proposals. I presume that social scientists

working for political parties, or for a national or local government find this picture familiar. It is clear that the researcher should be very careful here. Veracity is all too often replaced by opportunism and expediency. Moreover, arguments brought in by scientists could start leading a life of their own. They may be used by the client, but also by opposed groups, activists and other interested parties. Biased and misleading interpretations, generalisations, and selective use are more the rule than the exception. It is often impossible to get the genie back into the bottle again.

In this overview we have tried to show that within the borders of 'truthfulness' there is a variety of types of research in which practical relevance and usefulness may play a role during or after the research process itself. It has also become clear that the simple dichotomy 'pure versus applied' research does not suffice when describing the complex reality of scientific work.

Why under-utilisation?

If the social sciences have such a strong affiliation with social policy and if the knowledge of the dynamics of human behaviour and its interaction with the social environment is so important for growth and innovation, then an interesting thought thrusts itself upon us: Why is it that social sciences are not fully used, why do governments and industrial leaders so often neglect or disregard the findings and insights rendered by social science research? Why do political or industrial decision makers not request assistance from social sciences in the many instances when this would be expedient? Even in research funding the social sciences find themselves in the lower priority area (Drenth, 1996; EC, 2005a, 2005c). Of course, under-utilisation is a general complaint of scientists – and that is why many of the following reasons for such underutilisation do apply in a great many other disciplines of science as well - but it is especially the social science that seem to suffer from this negligence. What are the causes of or reasons for this disregard, in particular of the social sciences?

In the first place*, ignorance*. Obviously, the fruits of social scientists' meticulous research work insufficiently filters through to decision makers in the general public. Yes, the latter do acknowledge that 'psychological and social factors' are important and that one should not

forget about the importance of people's behaviour and the social conditions, but mostly this is the social 'science' of popular magazines, best-sellers and gurus. As incisively described by Pfeffer and Sutton (2006), this is often a mixture of hard facts, dangerous half-truths and total nonsense. Only the application of 'evidence based' social science will bear fruits.

Secondly, *confusion*. Even a supportive reader of social science research repeatedly runs into inconsistent and even contradictory results: Does participation lead to better decision-making or not? Does violence on television lead to more or less aggressive behaviour? Do satisfied workers perform better or worse? Should school classes be heterogeneous or homogeneous? Does lower unemployment lead to inflation or not? Does national pressure for assimilation of minorities lead to integration or to segregation? There are almost always research results available to support either point of view. We know, of course, that such differences can often be explained in terms of different samples, circumstances, instruments, or even a divergent research design. We also know that, certainly in the social and behavioural sciences, much of our scientific knowledge has an uncertain and probabilistic character and that solid, indisputable truths are seldom found. Fact of the matter is that incompatible and inconclusive research results often motivate the negation of these results.

Thirdly, part of the reluctance to use social science knowledge is caused by an *anti-science attitude* that has unfortunately gained influence lately (see also Drenth, 2003). These days we unfortunately all too often see facts being exchanged for dogmas, logic and reasoning for populist opportunism, and scientific findings for religious prejudice. The wide-spread public appreciation of science and its achievements that was evident until the middle of the 20th century has been replaced by doubts, scepticism and even enmity. The media, in which respect and admiration for science used to be predominant, now often express misgivings, criticism and disillusionment. It is likely that also those who should take social science knowledge into account in their daily work and decision making are affected by this anti-science sentiment, and turn away from evidence-based science.

And even if it is not a question of anti-science sentiments, many individuals, including industrial and governmental decision makers, reveal an unfortunate aversion to scientific and logical argumentation, and are inclined to accept all sorts of illogical views and claims. This is

a dangerous development in our society as has been pointed out eloquently by Taverne (2005) in his book "The March of Unreason". In this respect, Dawes (2001) has made an interesting distinction. Lack of sustaining evidence, evidence supporting the opposite view, or even outright contradictions are only important for people who (like to) think coherently and rationally, which takes time and effort. Unfortunately, many people think in the intuitive mode, which is swift, effortless and associative. This is then further reinforced by five of the "seven sins of memory" (Schacter, 2001): transience (forgetting things), misattribution (mixing aspects of memory), suggestibility, bias and persistency (perseverant memories of traumatic events). Dawes believes in educating people to become more rational thinkers, and hopes to fend off this intuitive mode.

Fourthly, there is, of course, *unwillingness*. People do not want to give up their spouse theories and beliefs. People do not want to believe that common sense is not always a valid judgement measure, that handwriting does not reveal personality characteristics, that people are not always driven by financial incentives, that surveys often conceal the truth. People do not want to give up their prejudices, their ethnic, geographic or gender stereotypes. Sometimes this unwillingness to accept scientific truths is prompted by the fact that these truths are politically incorrect or unwelcome. Our own finding that the Chinese pupils in schools on Java had the highest average scores in almost all intelligence tests was not welcomed by Indonesian officials. The conclusion that violence and criminal behaviour are significantly higher among second-generation Dutch Moroccan immigrants than in other immigrant groups and in the native population is a sensitive matter. Similarly, findings regarding gender or ethnic difference have been contested for being politically incorrect..

In the fifth place, there is *distrust*. Decision makers often have experience of being put on the wrong track by so-called experts who sold unwarranted certainty, communicated 'probabilistic' knowledge as if this were solid conclusions, offered valid explanations when hypothetical interpretations would have been appropriate, or who suggested that their conclusions were based on empirical evidence when this was unsatisfactory or even lacking. It is no wonder that decision makers often regard such 'misleading' scientific advice with suspicion and distrust.

Distrust also stems from social science advisors who do not make sufficient distinction between research results and their personal opin-

ions and normative views. Time and again, on the television or in newspaper interviews, we have professors of psychology or sociology presenting moral, pragmatic or political opinions instead of discussing scientific analyses or evidence-based conclusions. Of course, every citizen has the right to have and to present his own opinion, or to engage in political advocacy, but the point here is that this should be done in his personal capacity, and not in the name of science. In the latter case, social scientists lose their credibility as independent analysts, and are regarded as just another interest group.

Distrust may also be caused by another phenomenon: the general concern and doubts regarding the moral and ethical consequences of fast-developing science and technology. This was also revealed by a European survey of attitudes and opinions in which many people even express fear of scientists whose great knowledge could make them too powerful, and whose research could cross ethical boundaries, all of which is difficult to control (Eurobarometer, 2005). Interestingly enough, it is not ignorance that should be blamed. There is a zero-correlation between knowledge of and (dis)trust in science.

In the sixth place, we mention *disappointment*. Many politicians and managers in industry or government complain that social scientists do not provide answers to the real questions with which they are confronted. Fragmented and detailed laboratory studies are not regarded as making sufficient contributions to the understanding and handling of decision makers' complex and multifaceted reality. A strictly positivistic, quantitative tradition may be unsuitable to provide insight into the concrete contextual complexity of organisational or governmental decisions and strategy. Elsewhere (Drenth & Heller, 2004), we have argued that multi-method approaches, including qualitative and descriptive analyses, and the involvement of multidisciplinary teams, are necessary to address the compounded problems of modern organisations' strategies and courses of action. Such a renewed and successful approach would have to include a transdisciplinary orientation.

Finally, there is *deception*. This is particularly found in behavioural sciences, that deal with well being and mental health of people. Bona fide psychologists have to compete with all kinds of pseudo-scientific 'experts' who offer a range of furbished nonsense, which, however, often tallies well with intuitive prejudices (Drenth, 2003). Particularly in the field of individual or group counselling, organizational change and revival, and psychotherapy and healing, lots of pseudo-scientific

allurements can be found, ranging from hypnosis to neuro-emotional integration, from reincarnation therapy to healing by prayer, from scientology to neuro-linguistic programming (NLP). As said, in spite of much contra-evidence, the popularity of this pseudo-scientific moonshine is alarmingly high. In addition to a shrewd commercial formula and marketing, there is also a flirtation with science (impressive names, such as neuro-linguistic programming, 'scientific' books, masters degrees and diplomas) that lead innocent citizens up the garden path. How can the general public separate the wheat from the chaff?

Recommendations

By way of conclusion, we will make some recommendations for the social sciences.

(1) Recognise the whole spectrum from pure to applied social science. Recognise the specific goals and criteria of each of the different research forms on this spectrum, and therefore their specific characteristics and added value. Acknowledge the limitations of all specific methodological choices, and accept the need for a broader as well as more interdisciplinary approach at times to tackle the whole range of relevant social issues in present-day society.

(2) Ensure that the communication of research results is honest and fair. Do not focus too emphatically on the implementations for policy and practice, if unwarranted. Empirical evidence should be the only basis of conclusions, and with that a distinction should be made between reasonable certainties, probabilistic knowledge and educated guesses. Make a clear difference between scientific conclusions and personal beliefs and attitudes.

(3) Ensure that in concrete cases the social science knowledge, based on general laws and relationships, is contextualised. Within social sciences almost all generic laws and patterns are contingent upon a host of contextual variables. One of the most pertinent examples of the latter is culture. It is fair to say that in our multi-cultural world, the cultural contextualisation of models is almost a prerequisite.

(4) Social scientists should develop the skills to use various types of media to communicate their findings to policy-makers and to the general public. They should also participate in public debate. We agree with a recent ESF report which states (ESF, 2003) "Given that the public sector is the principal sponsor of research there is an increasing onus on all of us to devote more time to explaining, listening and debating."

(5) Social scientists should not evade moral and ethical issues that almost inevitably arise out of their research. Research-related ethical issues should be given full attention, including:
(a) justification of the choice of study: is it worth pursuing, and is it not in conflict with basic human values: human rights, human dignity, equality and non-discrimination,
(b) the nature of the data gathering or experimentation: informed consent, no unacceptable damage inflicted on the object of research (people, animals, environment, organisations),
(c) responsibility taken for what is done with the results of the study, either by the researcher or by others (for a more elaborate coverage of this subject see Drenth, 2006).

(6) Take a firm line with and endorse stringent regulations against pseudo-scientific movements and practices. A tolerant attitude, so typical of social and behavioural scientists, is not an appropriate method in this case. Quacks and swindlers deceive people, injure the general welfare, and encourage irrationality in society. And, in agreement with Dawes (2001), I believe that the world would be a better place if people made an effort to think rationally and to reason coherently.

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Section II

ALLEA | All European Academies

ALLEA | All European Academies
Strategic Framework 2008-2010

Jüri Engelbrecht

1. Frame of reference

Founded in 1994, ALLEA is an independent nonprofit organisation of national academies of sciences and humanities in Europe. Its activities are regulated by statutes and by-laws, and since 2006 it has been legally incorporated under Dutch law. It is currently hosted and administratively supported by the Royal Netherlands Academy of Arts and Sciences.

The membership of ALLEA is institutional, and currently consists of 53 academies from 42 countries. It is international and interdisciplinary, aiming to achieve unity in diversity through respect for the individuality and variety of its members, for the balance between the sciences, social sciences and humanities, and for the wealth of cultures and languages in Europe.

The evolution of ALLEA over the first eleven years of its existence is fully documented in *ALLEA Document (1): History and Development* (2005). The full list of ALLEA documents is given in an Annex.

2. Mission

The activities of the member-Academies reflect the diversity of the academic communities in Europe, but there is a clear intersection of objectives of different Academies, which includes addressing research and science-society relations in a systemic manner to achieve better knowledge and to develop a knowledge-based society.

ALLEA unites and strengthens the voice of Academies:
- in the learned world;
- in the service of society.

ALLEA seeks:
- to promote excellence in science and scholarship;
- to facilitate cooperation and the exchange of information and experience between academies;
- to offer independent advice on, and evaluation of, scientific policy and the promotion of science and scholarship;
- to address issues relating to ethics, research integrity, and the responsibility of science and scientists.

ALLEA's main mission is to unite Academies in science policy issues.

3. Vision

ALLEA is:
- the united voice of the member academies;
- the forum for the member academies;
- a recognized partner in Europe and worldwide for all other governmental and non-governmental institutions.

4. Position

4.1 ALLEA as one of the European organizations concerned with science and/or scholarship has a unique position: it unites national academies of sciences and humanities across the whole geographical area of Europe. ALLEA has the full weight and authority of academies and speaks for an influential constituency – the Europe of knowledge.

4.2 ALLEA strives for cooperation with other international institutions whose activities, focused on the potential of their members, are closely related:
- regional interacademic associations in Europe like InterAcademy Council of South-East Europe (IAC-SEE) or other informal groups (Vyšehrad group, Nordic-Baltic group, etc.);
- associations of trans-European scale: European Academies Science Advisory Council (EASAC), European Science Foundation (ESF), League of European Research Universities (LERU), Academia Europea, etc.;

- interacademic associations of other continents: Network of African Science Academies (NASAC), etc;
- interacademic and scientific institutions of global scale: InterAcademy Panel (IAP), InterAcademy Council (IAC), International Science Council (ICSU), etc.

5. Modes of action

5.1 Actions and activities generated by or through the existing structures of ALLEA:
- General Assembly: biennial meetings;
- President, Vice-President, Office: representation, policy, administration;
- Steering Committee: policy, governance;
- Standing Committees: oversight of specific areas of policy and concern;
- Working Groups: reporting on specific issues;
- Member-Academies: proposals for actions, rotating membership of Steering;
Committee; attendance at General Assemblies.

5.2 ALLEA's activities include:
- organisation of conferences, seminars and workshops on topics of general interest in science and science policy;
- publication of analyses, recommendations and discussion papers for academic and public consumption;
- formulation of advice on matters of science policy;
- provision of a forum in which member-academies may share information and discuss topics of mutual concern;
- representation at international meetings, committees, conferences etc.

ALLEA agrees with its partners (Workshop 'European Organisations on Cooperation in the ERA', The Hague, 15.12.2006) on possible actions, which in turn provide principles underpinning progress towards a knowledge-based society:

- only a world-class research environment can guarantee progress towards the goals of Lisbon and Barcelona;
- there is a need for a political will to develop ERA but this will must be fed by the community;
- education at all levels including that of policy-makers plays an important role;
- the self-organization of research communities should be encouraged;
- for scientists, sustainable career-paths are important, and should include return, promotion, open opportunities, etc;
- in the competitive and dynamic world, research organizations should clearly define (and redefine, if necessary) their role and targets;
- regional partnerships should be strengthened by clusters of European and world-wide co-operation;
- the effectiveness of programmes should be enhanced with attention to their 'pulling' effects;
- attention should be focused on dismantling the barriers in research (barriers between the Member States, different schemes, etc);
- public and private partnership in funding schemes and joint programmes should be supported.

6. Promoting the Europe of knowledge

6.1 In general terms ALLEA, following the principle that participation matters more than representation:

- reviews the modes of action, including funding schemes, and aims to enhance the proactive role of all its members and structures, helping academies to develop their voice;

- in order to enhance contacts between members, organises member fora / conferences every second year, alternating these events with General Assembly meetings;
- creates new Working Groups on problems of joint interest to members;
- publishes informative materials on and for its members.

6.2 Specifically, ALLEA:

- issues science policy analyses and statements and supports Pan-European joint activities;
- develops opportunities for cooperation between academies including cooperation at regional level;
- promotes the development of the ERA and stresses the role of excellence in research;
- develops joint activities with other partners striving for excellence (ESF, NetIAS, Lindau Foundation etc) and research integrity (ESF);
- promotes together with its partners (Euroscience, ISE, etc) public awareness and understanding of scientific issues;
- aims to set international values and standards in collaboration with partners;
- develops a role in the process of evaluating for science;
- develops a service to keep its members up-to-date on developments in science policy in Europe and worldwide;
- enhances the exchange of information between its members, especially on science policy and advisory issues.

6.3 Outcomes:

- Science policy documents;
- Advice;
- Meetings and member fora;
- Publications;
- Contacts with other institutions.

6.4 The current activities of ALLEA follow the Action Plan approved by the Steering Committee for every academic year.

ALLEA strengthens Academies in their essential and continuing efforts to promote, preserve and communicate knowledge.

Annex: Short description of main partners

Academia Europaea
Academia Europaea (1988) is a European, non-governmental association acting as an Academy. Members are scientists and scholars who collectively aim to promote learning, education and research. Over 2000 members, including leading experts from the physical sciences and technology, biological sciences and medicine, mathematics, the letters and humanities, social and cognitive sciences, economics and the law.

EuroCRIS
EuroCRIS as the professional association of CRIS (Current Research Information Systems) experts is dedicated to improvement of research information availability. EuroCRIS members together work on how best to use advanced ICT to improve research information availability and quality - using advanced database, knowledge base, process / work-flow, user interface, ubiquitous computing and GRIDS technologies. EuroCRIS works with its strategic partners to 'spread the word' about research information and its importance.

European Science Advisory Council (EASAC)
EASAC is formed by the national science academies of the EU Member States to enable them to collaborate with each other in providing advice to European policy-makers. It thus provides a means for the collective voice of European science to be heard. Through EASAC, the academies work together to provide independent, expert, evidence-based advice about the scientific aspects of public policy to those who make or influence policy within the European institutions.

European Science Foundation (ESF)

The European Science Foundation (1974) is an association of 77 member organizations devoted to scientific research in 30 European countries. ESF's core purpose is to promote high quality science at a European level. The ESF is committed to facilitating cooperation and collaboration in European science on behalf of its principal stake-holders (Member Organisations and Europe's scientific community).

EuroScience

EuroScience (1997) is a grass-roots organization open to research professionals, science administrators, policy-makers, teachers, PhD students, post-docs, engineers, industrialists, and in general to any citizen interested in science and technology and its links with society. It represents European scientists of all disciplines (including social sciences and the humanities), in the public sector, universities, research institutes as well as business and industry.

InterAcademy Panel (IAP)

IAP (1993) is a global network of the world's science academies. Its primary goal is to help member (in particular young and smaller) academies work together to advise citizens and public officials on the scientific aspects of critical global issues. Academies will be able to raise both their public profile among citizens and their influence among policy makers

International Council for Science (ICSU)

The International Council for Science (1931) is a non-governmental organization representing a global membership that includes both national scientific bodies (113 members) and international scientific unions (29 members)**.** ICSU provides a forum for discussion of issues relevant to policy for international science and the importance of international science for policy issues and undertakes core activities in the field of interdisciplinarity, advocating the freedom of science, promoting the exchange of ideas and disseminate knowledge through conferences, etc.

Network of African Sciences Academies (NASAC)

The objective of NASAC (2001) is to act as an independent African forum that brings together the nine merit-based academies of science in the continent to discuss the scientific aspects of problems of common concern, to make common statements on major issues relevant to Africa and to provide mutual support to member academies. In pursuing this objective the Network collaborates with other academies inside and outside the continent as well as with regional and international organizations concerned with African problems.

Steering Committee: 2006 - 2008

Chair
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Prof.dr. Nicholas Mann – Vice President, British Academy (UK)

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Standing Committees

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Dr. Johannes Schroots (Director ALLEA)

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Representations and Activities
Presidency and Office

27-28.02	ERC Launching Conference, panelist for the discussion on Excellence in Science, Berlin
09.03	US National Science Board Roundtable discussion on International Science and Engineering Partnerships, short intervention on ALLEA, Brussels
16.03	Conference Promoting Excellence in Science (a tribute to Bertil Andersson),ESF, Strasbourg
10.04	Meeting of PESTO – Platform of European S&T Organizations, short intervention on ALLEA views, Brussels
18.04	Seminar on the role of Research Councils in ERA, short intervention on ALLEA views, Budapest
18-19.04	Meeting of the ESF Governing Council, Budapest
26-27.04	ALLEA Steering Committee meeting, Istanbul
02-04.05	Symposium on Universal Values in the Academy of Athens, opening address, and short contribution on Changes in Society and Values, Athens; contribution P.J.D. Drenth
04-05	ICSU Conference 'Global Science and National Policies: the Role of Academies', Chisinau, Moldavia (Vice-President)
07-08.05	Conference „Foundations and Associations for Innovation and Economy: Europe and Italy“, talk „ALLEA unites the voice of European Academies“, Milan
18-19.06	EASAC meeting, Ljubljana
16.07	ISE General Assembly meeting, Brussels
24.07	PESTO Working Group (Research climate and research careers) meeting, Amsterdam
22.08	Visit to the Xian Jiaotong University, talk 'Striving for excellence in the European Research Area', Xian, China
08.09	Meeting with the Executive Committe of the UIA, Tallinn
14.09	Roundtable and Conference on FP6 with J.Potocnik, Tallinn
16-19.09	First World Conference on Research Integrity, welcome address on behalf of ALLEA, Lisbon; contribution from P.J.D. Drenth
25-26.09	IAP Executive Committee meeting, short presentation on ALLEA, Australian Academy of Sciences, Canberra

27.09	Meeting of Regional Networks of the IAP, overview on ALLEA activities on science policy and research integrity, Australian Academy of Sciences,Canberra
05.10	The 375th Anniversary of the University of Tartu, address on the behalf of ALLEA, Tartu
08-10.10	Conference 'The future of Science and Technology in Europe', discussant on optimising research programmes and priorities, Lisbon
18-19.10	ALLEA conference 'Emerging Regional Co-operation. SEE Academies of Sciences and Humanities in the ERA', JE - Chair, opening address, talk on Estonian R&D, discussion moderator, Amsterdam; talk by P.J.D. Drenth
20-23.10	Meeting of European Academies at the Institute of France, intervention on ALLEA activities, Paris
25-26.10	ALLEA Steering Committee meeting, Berlin
07-08.11	The 40th Anniversary of the Macedonian Academy of Sciences and Arts, Address on the behalf of ALLEA, Skopje
09-10.11	The World Science Forum, Budapest
28-30.11	ESF Conference and the General Assembly meeting, short Intervention on ALLEA, Strasbourg
19-20.12	EASAC meeting, Paris

Publications

General

Report (1996). Basic research in society (Chair: Paul Germain).

Report (1996). Research training and higher education in Europe (Chair: Carl-Olof Jacobsen).

Report (2001). History of science and technology in educational training in Europe (Chair; Ch. Debru)

Drenth, P.J.D., Fenstad, J.E. & Schiereck, J.D (Eds.) (1999). European science and scientists between freedom and responsibility. Brussels: European Commission.

Drenth, P.J.D. (2006) Walks in the garden of science: A selection of essays, papers, lectures and key-notes by Prof. dr P.J.D. Drenth, President (2000-2006) of ALLEA | All European Academies. Amsterdam: ALLEA.

Statutes (2006). ALLEA Statutes as revised at the General Assembly 2006, Kraków.

Annual/Biennial

Annual Report 2001. Amsterdam: ALLEA, 2002.

Biennial Yearbook 2002: Quality in science (Eds. P.J.D. Drenth & J.J.F. Schroots). Amsterdam: ALLEA, 2003.

Annual Report 2003. Amsterdam: ALLEA, 2004

Biennial Yearbook 2004: Critical topics in science and scholarship (Eds. P.J.D. Drenth & J.J.F. Schroots). Amsterdam: ALLEA, 2005.

Annual Report 2005. Amsterdam, ALLEA, 2006

Biennial Yearbook 2006: New perspectives in Academia (Eds. P.J.D. Drenth & J.J.F. Schroots). Amsterdam: ALLEA, 2007.

Report Series

Engelbrecht, J. (Ed.)(2002). National strategies of research in smaller European countries. Amsterdam/Tallinn: ALLEA/Estonian Academy of Sciences (Report Series 1).

Tabatoni, P., Bell, J., Del Campo Urbano, S., Franken, H., Rigaux, F., Terré, F. & De Woot, Ph. (Eds.)(2002). Privacy protection in the information society. Amsterdam: ALLEA (Report Series 2).

Hackmann, H., Drenth, P.J.D. & Schroots, J.J.F. (2004). Evaluating for science. Amsterdam: ALLEA (Report Series 3).

Drenth, P.J.D., Honnefelder, L., Schroots, J.J.F. & Sitter-Liver, B. (Eds.)(2006). In search of common values in the European Research Area. Amsterdam: ALLEA (Report Series 4).

Advice

Drenth, P.J.D. & Drees, W.B. (2001). Science, society and culture: Advice to the European Commission concerning the concept of the 6th Framework Programme. Amsterdam: ALLEA.

ALLEA Review Committee (2003). Evaluation of the European Science Foundation's Standing Committees in the Social Sciences and Humanities. Amsterdam: ALLEA.

KNAW / NWO / VSNU (2003). Memorandum on scientific integrity. Amsterdam: ALLEA (KNAW / NWO / VSNU).

Drenth, P.J.D. (2005). Investing in knowledge in Europe: Reflections of ALLEA | All European Academies on the proposals for the 7th Framework Programme. Amsterdam: ALLEA.

Engelbrecht, J. (2007) Challenges of the future. Reflections of ALLEA on ERA. Amsterdam: ALLEA.

In preparation:

Engelbrecht., J. Reflections of ALLEA on the EC Green Paper.

Engelbrecht, J. & Schroots, J.J.F. (Eds.) Proceedings of the conference 'Emerging regional co-operation. Southeast European Academies of Sciences and humanities in the ERA'. Amsterdam: ALLEA.

Acronyms

ALLEA	- All European Academies
COST	- European Cooperation on Science and Technology
EASAC	- European Academies Science Advisory Council
EC	- European Commission / European Community
Ed(s.)	- Editor(s)
ERA	- European Research Area
ERA-NET	- Networks under ERA
ERC	- European Research Council (EC)
ESF	- European Science Foundation
ESOF	- EuroScience Open Forum
EU	- European Union
EURAB	- European Union's Research Advisory Board
FP7	- Seventh Framework Programme (EC)
GA	- General Assembly
IAP	- InterAcademy Panel
ICSU	- International Council for Science (formerly: International Council of Scientific Unions)
IPR	- Intellectual Property Rights
ISE	- Initiative for Science in Europe
NASAC	- Network of African Science Academies
(N)GO	- (Non) Governmental Organisation
OA	- Open Access
OECD	- Organisation for Economic Co-operation and Development
R&D	- Research & Development