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annual report 98

European Science Foundation

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1974 • 1999

Since 1974 the European Science Foundation (ESF) has acted as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European scientific and science policy initiatives.

ESF is the European association of 65 major national funding agencies devoted to scientific research in 22 countries. It represents all scientific disciplines: physical and engineering sciences, life and environmental sciences, medical sciences, humanities and social sciences. The Foundation assists its Member Organisations in two main ways: by bringing scientists together in its scientific programmes, networks, exploratory workshops and European research conferences, to work on topics of common concern; and through the joint study of issues of strategic importance in European science policy.

It maintains close relations with other scientific institutions within and outside Europe. By its activities, the ESF adds value by cooperation and coordination across national frontiers and endeavours, offers expert scientific advice on strategic issues, and provides the European forum for science.

Contents

Highlights of the year

New Secretary General

Enric Banda, a geophysicist and former Spanish Secretary of State for Universities and Research, became the ESF's latest Secretary General, in June 1998, after Peter Fricker's five-year term came to an end.

12 scientific networks launched

- Development of Methods to Investigate the Interaction between Nutritional, Environmental and Genetic Factors in Early Human Development
- Genetic Susceptibility to Environmental Toxicants – Impacts on Human Health
- Changing Land Use and its Impact on Biodiversity
- Exploring the Deep Sub-seafloor Biosphere
- Silk: properties and production
- Elementary Steps of Layer Growth in the Fabrication of Novel Materials by Atomic Layer Epitaxy
- Field-responsive Polymers, Composite Organic Materials and Gels with Controlled Supramolecular Structures
- Early Modern Thought: reconsidering the borderline between the Middle Ages and Early Modern Times
- Citizens in Transformation
- Demographic and Labour Force Participation Trends in Europe and their Implications for Social Protection Expenditure
- European Trade Study Group
- Innovative Practices and Emerging Concepts for Sustainable Urban Management in Developing Countries: a European contribution

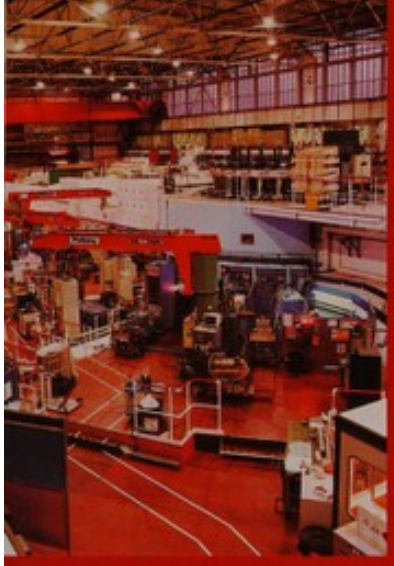
13 scientific programmes start work

- Cyanobacterial Nitrogen Fixation
- Geodynamics and Ore Deposit Evolution
- Ground Water Pollution
- Response of the Earth System to Impact Processes
- Theoretical Biology of Adaptation
- Complex Atomistic Behaviour of Solids and Surfaces
- Fermi-liquid Instabilities in Correlated Metals
- Molecular Magnets
- Nanomagnetism and Growth Processes on Vicinal Surfaces
- Probabilistic Methods in Non-Hyperbolic Dynamics
- Musical Life in Europe, 1600-1900: circulation, institutions, representation
- European Summer Research Institutes on Comparative Studies of Economic Organisations
- Tackling Environmental Resource Management (phase 2)

In addition, another 10 programmes were given the go-ahead for a 1999 launch on topics ranging from the *Assessment of the Impacts of Genetically Modified Plants* and *Quantum Information Theory and Quantum Computation* to *Social Variations in Health Expectancy* and *Cultural Exchange in Europe*.

EURESCO conferences strengthened

Plans are in place to secure the long-term future of the Foundation's EURESCO conferences. This will include organisational changes and new funding arrangements. In 1999, there will be a 50% rise in the number of these conferences. See p.18.



Involvement in large facilities stepped up

Amongst other activities the ESF built on its experience as an independent adviser in the field of large research facilities by analysing the future need of Europe's biomedical research community for synchrotron radiation facilities. The Foundation also assessed the scientific cases for expanding Europe's neutron sources and creating a 100 Tesla science laboratory. See p.24.

Foundation expands advisory role

Suggested research priorities to help alleviate the impact of environmental degradation on health were put together for the Third Ministerial Conference on Environment and Health, due to be held in London in 1999. Jointly submitted by the ESF, WHO and EC, the proposals drew on the expertise of more than 200 leading scientists, from neurologists to epidemiologists.

ESF–Industry agreement protects radio astronomy

Fears that an important frequency band used by radio astronomers could be polluted by emissions from telecommunications satellites have been partially allayed by an agreement with the company operating the satellites. The concordat was negotiated by the ESF's Committee for Radio Astronomy Frequencies (CRAF).

ESF membership expands

The Foundation welcomed its first two Members from the Czech Republic, bringing the number of institutions belonging to the ESF up to 65, spanning 22 European countries.

Changes in Standing Committee chairmanship

The 1998 Assembly approved the four-year appointment of new chairmen to four of the ESF's five scientific Standing Committees after the previous incumbents' terms of office came to an end.

European Medical Research Councils
Professor Albert Hofman, Professor of Epidemiology at Erasmus University and Scientific Director of the Netherlands Institute for Health Sciences.

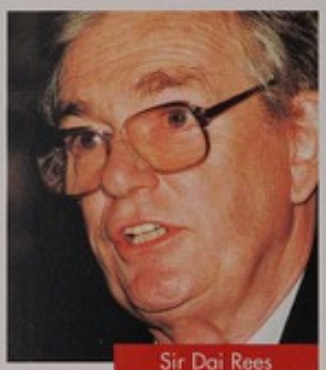
Life and Environmental Sciences
Professor Lars Walløe, Professor of Physiology at the University of Oslo and Research Director of the Institute of Marine Research, Bergen.

Physical and Engineering Sciences
Professor Juan Rojo, Professor of Solid State Physics at the Universidad Complutense de Madrid.

Humanities
Professor William Shea, Professor of History and Philosophy of Science, University of Strasbourg.

We would like to thank the previous chairs of these committees – **Professors Leena Peltonen, Werner Rathmayer, Jens-Erik Fenstad** and **Wim Blockmans** – for their work and enthusiasm. **Professor Robert Erikson** remains Chairman of the Standing Committee for the Social Sciences until the end of 2001.

President's commentary



Sir Dai Rees

The recent easing of financial pressures on Europe's scientists, however small, is an encouraging development not just because it injects much needed resources into research but also because it indicates that society believes that science can help in solving its social, economic and technological problems. We need to manage these expectations carefully. In the past, we have satisfied society's spiralling aspirations for economic growth and prosperity through the happy coincidence that the quest for knowledge for its own sake frequently generates products for practical benefit. Today, the public and politicians do not have the patience to wait for results to materialise by chance. There is an increasingly strong expectation that research should be needs-led and should deliver today; a demand that could lead to impoverishment rather than growth of the stock of scientific knowledge. Sensible accommodations will have to be made.

We should welcome accommodations like these since it would be socially irresponsible for science to stand apart from the problems of today's complex world, and in any case science needs to be needed if it is to continue to be funded. The major positive and negative impacts of science on society are recognised by everyone else and must also be recognised by the scientific community, especially since these linkages are reflected in the strings that governments – and the voters that elect them – attach to funding.

The academic and worldly dimensions of science can no longer be considered separately from each other. We seem to stand at a defining moment in our history, at a crossroads in the relationships between science and society and science and governments. We the scientists can choose which way to go. Science can either bid for a full partnership role with the public and governments, accepting all the hard work and debate entailed in learning to appreciate and respond to outside needs. Alternatively it can withdraw into its separate world and live with whatever decisions are made about funding and policy without its input.

Where does the ESF, now in its 25th year, stand in all this? The ESF's main aim has always been to crystallise the key problems and engage the best minds in Europe in collaborative initiatives. Traditionally we have focused on purely scientific issues and must continue to do this as a pan-European scientific organisation spanning all disciplines. But we must now also take into account the social implications of the pursuit of science. I have been pleased to see the ESF take several steps in this direction including the decision taken in 1998 to launch a new programme to investigate the environmental impact of transgenic plants. Similarly, new initiatives planned to assess the opportunities for Europe in post-genomic biology, specifically protein structure and function, will also consider the implications of this revolutionary new understanding for industry. The ESF is also networking to help Member

Organisations spread best practice in matters of social importance. Examples are management to ensure good scientific practice, and linking with venture capital to exploit research discoveries. We have been active in formulating independent expert analyses for policy makers and industry. A notable recent example is the identification by the Foundation and its Members of research priorities for policy making in the area of environment and health, at the request of the Conference of European Ministers for Health and Ministers for Environment. The final report will be presented to Ministers in June 1999 and might also provide a model for the provision of scientific advice to governments on other matters.

Finally, there is a growing awareness amongst the public, governments, and academia, that any increased accommodation between science and society requires better mutual understanding of desires and concerns. This does not imply merely that the public should understand more science but also that scientists should put more effort into understanding the public. The ESF is organising a scientific workshop in July 1999 which will explore the psychological and social mechanisms at work in changing public attitudes. This will address in particular the origin of non-rational beliefs ("gut feelings") in risk perception and ethical convictions.

Of course, the ESF must not rest at addressing only today's concerns, nor even with the new problems and questions which constantly bombard us. It must continue to look to the future with its own purely scientific initiatives to push forward the intellectual frontiers of science. The demands of this large agenda will put ever-increasing pressure on our structures and administration. Changes are therefore needed in the way the ESF works. Having a compact and cohesive secretariat of high quality is already in our favour, but further improvements are needed. This is the reason for the current rethink of structures and governance. In particular, we need a clearer delineation between strategic and operational responsibilities so that all parts of our organisation can work towards clearer targets. Streamlining these structures is also required to help us cope with our growing membership base, especially as more institutions from eastern Europe join our ranks. This widening of horizons and enhancement of scientific resources, means even greater international scientific responsibilities for the ESF.

Within all this turmoil, we must always remember that the ESF's first responsibilities are to the health of science and excellence in research, and the identification and implementation of cutting-edge developments in science. We are not unique in our attention to the relationships between science and practical matters but we are unique in our credentials for advancing the health of science itself. In the last resort, this must be our overriding commitment. As I draw to the close of my final year as the ESF's President and sign off my final annual report statement, I am confident that the ESF has the imagination and determination to respond to the increasing challenges and to continue to progress.

Sir Dai Rees, *President, ESF*

Secretary General's review

Enric Banda

Having become the European Science Foundation's Secretary General only in the middle of the year under review, I unfortunately cannot claim responsibility for the ESF's undoubted achievements during 1998 which were largely due to the energy and vision of my predecessor, Professor Peter Fricker. Instead, after a brief round-up of the main highlights of the year, reported in full elsewhere in this publication, I would like to explain how I think we can build on these initiatives to capitalise on European scientific potential during one of the most important periods in Europe's recent history.

Like any organisation, the ESF has its strengths and weaknesses but I am pleased to report that in 1998 the Foundation continued to play to its strengths and had the courage to recognise and address areas where further improvements were required. In terms of the Foundation's core scientific activities – exploratory workshops, networks, programmes and EURESCO conferences – further progress was made. The growth in the number of exploratory workshops, which enable scientists to discuss the value and feasibility of novel lines of thinking, was particularly encouraging. During the year we supported nearly 30 of these across most disciplines, underlining our commitment to spearheading innovative research.

Our drive to stimulate greater multidisciplinary, pan-European collaboration also gathered pace with the launch of 13 new scientific programmes and 12 scientific networks. A further 10 Programmes and up to 10 Networks are scheduled to be rolled out in 1999.

Cultivating tomorrow's generation of scientists

Moreover, we helped to cultivate tomorrow's generation of scientists – essential if we are to sustain the development of European science – by organising 27 EURESCO conferences, which bring together young and established researchers to discuss cutting edge issues in a Gordon-style setting.

As well as supporting specific scientific activities, the ESF also further developed its role as an independent scientific adviser to national and international bodies on a variety of issues, including science policy ones. In so doing, we have stepped up our activities in providing independent scientific assessments on a range of issues related to large research facilities. In 1998, we carried out a wide-ranging review of the biosciences' use of synchrotron radiation and made considerable headway in assessing the scientific case for establishing a European Laboratory for 100 tesla science and in surveying the health of the region's neutron-scattering capabilities. At the same time, a social science task force was putting the finishing touches to a blueprint for a European Social Survey.

None of these achievements would have been possible without the support of our Member Organisations, whose breadth of expertise and experience is our greatest asset. To consolidate this scientific capability, we welcomed into the ESF our first Member Organisations from the Czech Republic, the Academy of Sciences

and the Grant Agency of the Czech Republic, bringing our total number of Member Organisations up to 65, representing Europe's top scientists in 22 countries and across all disciplines.

So where do we go from here? This is certainly a fitting time to ask this question. We are not only on the brink of a new Millennium, the ESF is also celebrating its 25th anniversary in 1999 and should take stock of its past achievements and assess how these can be used to enhance European science over the next two and half decades.

"We have to be pro-active and make our voice heard"

On the surface, the cards appear to be stacked in our favour. Europe is rapidly becoming a knowledge-based society and science is fundamentally about knowledge and its application. Possibly in response to this shift science is also back in vogue in government circles, mirrored in increased funding in general.

However, we cannot afford to be complacent. We have to be pro-active and make our voice heard. I believe we not only have a responsibility to do this for the sake of the continued development of European science but also a moral and social duty. Properly harnessed, science has the potential to make a significant contribution to Europe's social and economic development without compromising its independence and integrity.

How can the ESF help? To answer this question, we need to consider what the 'New Europe' might look like when the Foundation approaches its fiftieth anniversary. I am surely not alone in thinking that at a macro level there will be greater economic and political unity, probably involving a confederation of around 30 countries, including a higher proportion of states from central and eastern Europe.

"the Foundation has the critical mass to make an impact on the European stage".

I believe the ESF is well-equipped to help science flourish in such an environment. We not only have proven mechanisms for mobilising researchers at a pan-European level but also the independence required to understand and protect the independence of science at a grassroots, subsidiary level – an essential ingredient for innovation.

Above all, the Foundation has the critical mass to make an impact on the European stage. With 65 Member Organisations from more than 20 European countries, we are in the rare position of being able to bring together a representative cross-section of the region's top scientists, from all disciplines, to address key issues. The noteworthy phrase is 'from all disciplines'. Given Europe's diversity, our multidisciplinarity can play a pivotal role in helping policymakers and other groups understand and overcome the region's differences. Our Environment and Health research agenda to which Sir Dai has already referred and which will be jointly submitted by the ESF, the World Health Organisation and the European Commission to the Intergovernmental Conference on Environment and Health in June of 1999, is a recent example of this strength.

More immediately, we have to find ways to capitalise on the collective expertise and knowledge of our Members across Europe more effectively. The ESF has many of the instruments to do this, but they need to be strengthened. Our scientific networks, for example, have proved highly successful in establishing multidisciplinary networks that long outlive their initial funding and often go on to attract additional funding, pioneering new fields of research. Since 1984, when they were established, over 75 networks have been set up, bringing several thousand scientists across Europe together. However, I believe that the scheme has yet to realise its full potential.

Need to strengthen our scientific standards

New methods of stimulating collaboration also need to be investigated. Complementing our *à la carte* scientific programmes, one possibility being discussed by the Foundation is to develop a new collaborative approach to European research funding. This would aim at developing a variable geometry model in which ESF and interested Member Organisations would jointly define a topic and specify the research proposal. Calls for proposals could then be sent out across Europe and the submissions peer-reviewed by an international panel organised by the ESF, while leaving funding decisions with the national funding agencies themselves. The resulting research activity

would be handled within the ESF coordinating mechanism to ensure effective international programme management, monitoring and evaluation.

Equally importantly, we have to involve more young scientists in collaborative initiatives if we are to sustain Europe's scientific advances in the long term. As I mentioned earlier, the ESF's EURESCO conferences have been an outstanding example of how to do this. However, as was recognised in the recommendations of a recent review of the scheme, their over-reliance on being successful in winning grants from the European Commission has made it difficult at times to plan ahead or to support as many conference series as we would like. There was a clear need for EURESCO to be put on a more solid, long-term financial footing. In line with this objective, the ESF has allocated more funds for these conferences in 1999 and launched an appeal to its Members to help create a Containment Fund to support a healthy programme of EURESCO events over the next three years. The response has been very encouraging and I am confident that a long-term financial solution can be arrived at. Forty conferences are planned for 1999, a figure set to rise still further in the future.

"Possibly the greatest battle Europe's scientific community faces in the long term is to persuade Europe as a whole of the value of science".

Links with industry – both financial and intellectual – not only help to inject entrepreneurialism into science but also ensure that its achievements translate into social and economic gain for Europe as a whole. The USA has been very successful in establishing two-way exchanges between its scientific community and industry, without undermining the rigour or integrity of its research. Europe should have the imagination to do this too.

However science does not just need to connect only to industry, it also has to establish a closer relationship with policymakers, partly to make its voice heard but also to develop a clearer understanding of Europe's social and economic goals. We need to enhance our links with various institutions of the European Union. While our aim should be to complement, not compete with, the Commission's activities, Europe's scientific community would profit from the establishment of a mechanism for the provision of more coordinated advice to the Commission and other bodies. With its established links to other important players, such as EuroHORCs, Academia Europaea, CRE, Euroscience *et al.*, and its long history of cooperation with the EC, the Foundation is well placed to play an important role in developing it.

Generally, I believe the ESF should play a more active role as an adviser. In particular, we should use our non-governmental independence to protect and enhance Europe's scientific infrastructure, building on our commendable track record in this field.

Possibly the greatest battle Europe's scientific community faces in the long term is to persuade Europe as a whole of the value of science. This is largely a question of improving the dialogue between science and society to avoid distorted information and misconceptions that have blurred so many issues recently, including genetics. To help combat these problems, the ESF is investing more heavily in communications, including IT-based solutions. Greater transparency and dialogue outside the scientific community is essential to win public confidence. However, the scientific community also needs to show that it runs a tight, professional and ethical ship. The ESF has tried to encourage the highest professional standards by initiating workshops on bioethics and clinical trials, and reviews of good scientific practice, amongst other issues.

The Foundation cannot do this on its own, nor does it claim to be the white knight of European science. But, with its Members' support and the initiatives I have sketched out above, I am confident we can make a major impact and help place science, once again, at the heart of Europe.

Enric Banda, *Secretary General, ESF*

Stimulating innovative research

The ESF focuses on cutting-edge research that can be carried out only at a European level, often involving a variety of disciplines. Although we do not have the financial resources to support major research programmes, we have the tools and commitment to allow researchers to explore innovative fields and to mobilise and coordinate larger scale funding. Here we report on just a short selection of the many workshops, conferences, networks and programmes organised by the ESF and its five Standing Committees during the year.

David Knight

Sea silk
Scanning electron microscopy of a collagenous silk filling a row of natural spinnerets which spin a liquid crystalline collagenous silk into the plywood-like structure of the egg case in Selachian fish (rays and skates).

Web of intrigue

Despite the fact that silk has been used by man for centuries, and crudely copied by industry, remarkably little is known about the natural processes that enable spiders and other creatures to produce this tough and versatile material to such exacting standards. A new ESF network hopes to unravel the answers to this potentially lucrative question.

"Genetic engineering can produce natural silk proteins but when we try to draw threads out of these their mechanical properties are very poor," explains David Knight who works with Fritz Vollrath at Oxford University's Department of Zoology, both members of the Coordination Committee of the new network, *Silk: properties and production*. "Clearly there is something very clever about the spinning mechanism used by spiders, for example, that helps make the silk so tough. Remarkably, they do this at low pressure, normal body temperature and without using nasty chemicals. They only use their muscles or body weight to draw out the thread."

David Knight

Backscatter confocal microscopy of a similar preparation as above showing how molecular orientations develop during the natural extrusion process.

Knight and other scientists working in this field believe spiders have three main 'tricks' up their sleeves. First, they manipulate their liquid crystal feedstock in a way that keeps the required energy down to a minimum. Second, they draw out the silk thread from inside a tapering tube, unlike industrial processes that spin silk from a nozzle. "The big advantage of tapering is that it makes spinning size and rate insensitive," says Knight. "This enables tiny and large spiders to produce silk threads to a consistently high standard at rates of between 1mm and 500mm per second, a 500-fold change that is totally unheard of in industry". Finally, spiders can recycle the water from the spinning solution, a key asset for surviving in dry conditions.

If scientists can get to the heart of these and other issues (and Knight is already working with a company to spin spider protein), the number of commercial applications is huge. In the medium term, fresh insights into the spinning mechanism could lead to the development of new biocompatible materials for suturing, repairing and packing out human tissue and, further down the line, use as the structural component of artificial organs including arteries for microvascular surgery.

The ESF's new network, however, will not be focusing exclusively on spider silk. It will also encompass midges, which spin silk under water, and silkworms, amongst other creatures. "This will help us understand how a range of different properties can be engineered into silk."

Involving a broad cross-section of disciplines, from zoology and biophysics to materials science and rheology, the three-year network will include three major workshops. The first, which took place recently, covered general aspects of silk. The second will concentrate on silks and other fibrous biomaterials such as tubulins, elastins, resilins and collagens. The final workshop will investigate liquid crystalline transition in fibrous materials during the spinning process, with particular emphasis on spider silks.

For network details see page 49

Defusing the potential for large-scale accidents

The pollution disaster that threatened the Doñana National Park in Southern Spain in April 1998 provided another painful reminder that Europe is far from immune from major industrial accidents, especially as industries continue to push themselves to their technological limits and the region's population density intensifies. The problem is finding a way to minimise the risk without immobilising businesses in a web of red tape.

Göran Skogh, at Linköping University in Sweden, believes an answer lies in how the financial liability for large-scale accidents is apportioned: a legal issue. "Although there are strict liability rules governing negligence, it is usually up to victims to prove that the industry is responsible for an accident which is often extremely difficult," he says. "This, coupled with the limited assets, effectively means that the industry has limited liability and that the main cost of the accident is borne by the victims or the state. It also increases the likelihood of these disasters: if industries are not fully liable for the economic and social costs of an accident, they do not have the financial incentive to carry out comprehensive risk assessment and management programmes to prevent these events occurring. To be effective, liability standards must be directly related to accident costs."

The obvious solution is to force businesses to accept either 'strict' or full liability for these disasters but, as Skogh points out, this approach has several pitfalls. First, it might not be possible to identify a single culprit. BSE, for example, could be classified as a large-scale accident straddling several nations but it is difficult to pin the blame on an individual organisation. Second, the insurance industry is often not prepared to accept very large potential losses and can find it difficult to estimate and price the risks. In the event of a large-scale accident, this could lead to the business going bankrupt or the state picking up the tab for the difference. Or both. In addition, there is a danger that potentially punitative damages or excessively high insurance premiums could deter businesses from taking commercial risks that could ultimately be in everyone's interests. "You have to strike a balance, " says Skogh.

Víctor de Lorenzo

Doñana National Park
Making whole industries fully liable for the costs of accidents might hold the key to preventing future disasters.

One solution being canvassed is for the industry as a whole to agree to share the financial liability for an accident involving an individual member. This avoids the need for separate businesses to pay insurance premiums – the industry effectively acts as the insurer – and is likely to encourage consistently high standards across the sector to ensure a disaster, and all its financial implications for other members, does not occur. In fact, this strategy has already been adopted by several sectors in the USA.

How this approach or any other solutions might work in Europe has been the focus of an ESF exploratory grant on *The Law and Economics of Very Large Accidents in Europe*, which addressed three key questions. Can industrial risks be covered by equity requirements, insurance and guarantees? Can nations or international conventions compensate victims? And will accidents be prevented by liability requirements, insurance policies and public safety regulations?

Focusing on specific large-scale accidents that cross different national, legislative and cultural boundaries, the project drew on the expertise of lawyers and economists. Academics also cooperated with the Geneva Association, a group of insurers, and will publish their findings in the Association's journal.

For a full listing of 1998 exploratory workshops see page 53

Quick fix of nitrogen

Nearly 80% of the Earth's supply of nitrogen, a vital ingredient for crop productivity, is floating around in the atmosphere. Unfortunately very few organisms can make use of gaseous nitrogen for fixation in cell material, which forces the developing world to commit a large proportion of its energy budget to the production of readily assimilable nitrogen-based fertilisers. To make matters worse, overzealous use of these fertilisers has led to widespread water pollution and it has even been implicated in conditions such as 'blue baby' syndrome.

Cyanobacteria could hold the key to solving these problems. These organisms can fix nitrogen and, in many cases, they literally live off fresh air, generating all their cellular carbon and nitrogen from atmospheric sources and water. Their main strength – and a potentially fruitful area for research – is that they have mechanisms that protect them from being contaminated by oxygen. Oxygen inactivates the enzyme called nitrogenase, which is responsible for fixing nitrogen.

Cyanobacteria actively establish intimate relationships with a wide range of organisms, including higher plants, ferns, liverworts, algae, fungi and invertebrates. Artificial symbioses made up by crop plants containing cyanobacteria could be at least partially independent from nitrogen fertilisers, as they would be able to obtain organic nitrogen directly from the cyanobacteria. But the real problem, in terms of developing plants that could incorporate cyanobacteria, is that scientists do not know enough about the mechanism of reciprocal recognition between the plant and its host. This mechanism allows the establishment of a close relationship in which the plant responds to the high energy demand of the cyanobiont (nitrogen fixation is an expensive process in terms of chemical energy) by producing rich sugars, and by stripping organic nitrogen from its host.

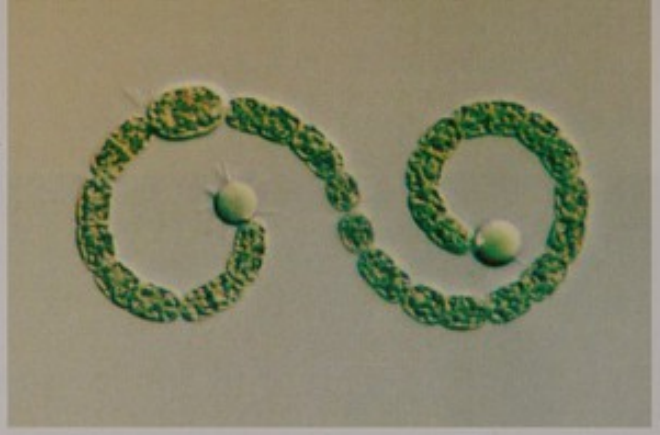
"The process for nitrogen fixation is also extremely sensitive to oxygen," says Dr Stefano Ventura at the Centro di Studio dei Microrganismi Autotrofi. "But cyanobacteria – an extremely diverse group of microorganisms – have evolved several systems to protect themselves from the 'poisonous' oxygen produced during photosynthesis. These include nitrogenase enzymes with a reduced sensitivity. If we can develop a nitrogen fixation system that is suitably insensitive to oxygen, we could envisage inserting it directly in plants thereby removing the need for fertilisers."

Knowledge of cyanobacteria is not new. There are references dating back over 2,000 years to the Chinese using a water fern, *Azolla*, to transfer nitrogen to rice through a symbiotic relationship. Crop rotation in Europe, involving legumes, is based on similar principles. However, as Ventura points out, to make real headway in this field we need to gain a deeper understanding of the genes involved in nitrogen fixation and of the genetic biodiversity of cyanobacteria.

Along with 30 other leading scientists from 11 countries, he will be studying this genetic issue and other facets of cyanobacteria in a new ESF programme entitled *Cyanobacterial Nitrogen Fixation*. Like many of the Foundation's programmes and other scientific initiatives, it will pool the expertise of different disciplines. Focusing on all major plant groups and all types of nitrogen fixers, the five-year programme will look at several areas. These include the physiology and molecular biology of cyanobacterial nitrogen fixation, the genetics of these bacteria and symbiotic varieties of them, and communities of cyanobacteria that possess the necessary mechanisms to protect the nitrogenase against the effects of oxygen.

"It's an extremely promising but challenging field," adds Ventura.

For programme details see page 39



Claudio Sili, CSMA-CNR

Anabaenopsis *sp. with terminal heterocysts. Heterocysts play an important role in protecting nitrogenase from inactivation by oxygen.*

A1 conference on B-cells

A EURESCO conference that brought together scientists and clinicians specialising in B-cells has indicated a number of potential new lines of treatment for patients suffering from autoimmune problems.

In one session during the five-day conference in Italy, a discussion of discoveries in B-cell development revealed that patients with systematic lupus erythematosus (SLE), who are usually young females, appear to have an activated 'receptor editing' process, resulting in structural modifications to autoantibodies. Evidence showed that these autoantibodies mediate direct pathological effects and the researchers believed that molecular definitions of their binding sites could help clinicians develop therapies that block these sites.

Other issues covered included the interaction of B- and T-cells and a description of an interesting molecular linkage between infection with *Campylobacter* and the neurological disease Miller-Fisher syndrome.

There was also a meeting to discuss possible ways that academics and pharmaceutical companies could collaborate further to translate findings from basic research into therapeutic applications.

For more information on EURESCO conferences see page 54

Infant brain development

Insights into how the brain functions and develops have moved on a long way since the days of phrenology but a large number of questions still remain unanswered, notably how far certain mental functions are pre-specified at birth and how brain maturation and organisation interact with environmental factors.

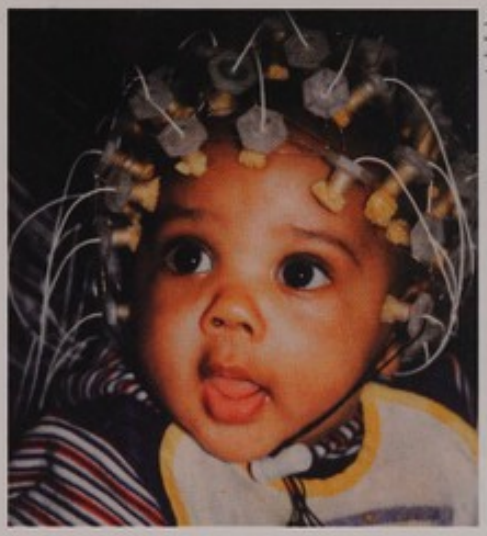
Discovering the solutions to these conundrums, report Scania de Schonen of the Laboratory of Cognition and Development at the University of Paris 5 and CNRS and Mark Johnson of the Centre for Brain and Cognitive Development at the University of London, could help physicians treat people who have suffered damage to their brains. "If a function, such as face-processing, is pre-specified in a fixed part of the brain, it is unlikely this function can be restored if it is damaged," they say. "However, if it can develop in various parts of the cortex and one of these is affected, others could possibly be trained up to compensate for the loss."

De Schonen and Johnson were chairman and co-chairman of an ESF EURESCO conference attended by some 90 delegates, entitled *Brain Development and Cognition in Human Infants: development and functional specialisation of the cortex*. "The main thrust of the conference was to understand the interaction between the environment and genetics at every level, from molecules up to the behaviour of the organisms," they report. "In particular, we pooled our research and ideas to understand how cortical areas develop functional specialisation and the factors that contribute to this process.

"The picture that emerged was very complex and uncertain, suggesting that further research is required. Nevertheless, it appears that basic visual functions are specified quite early on in a child's development, while language tends to be more plastic. Comparisons with data from primates and rodents also indicated that there was considerable scope to shape post-natal brain development in children as their brains develop over a longer period of time.

Although the conference raised more questions than it answered, its main advantage was that it brought together researchers working on both anatomy and cognitive brain development which doesn't usually happen but which raised some interesting points we hope to address in future conferences." These included congenital cognitive impairments and the need for computational modelling to shed light on how learning could contribute to the organisation and specialisation of the neo-cortex.

For more information on EURESCO conferences see page 54



Leslie Tucker

Understanding brain development
Six-month infant wearing a Geodesic Sensor Net which measures the electrical activity of the brain.

Modern rethink

Schools might soon have to jettison their history books and rethink the way they teach students about the borderline between the Middle Ages and Early Modern Times.
For centuries, it has been assumed that the Renaissance marked a huge intellectual divide between the preceding medieval period and the following early modern era, including the advent of science. However, there is a growing raft of evidence that innovative intellectual activity of the 14th century strongly influenced philosophies and styles of thought until the 17th century and provided the origins of modern ideas in many realms of human activity.

"The notion of liberties as rights, for example, has traditionally been seen as a 17th century concept, attributed to people such as Hobbes and Locke but research has found that these issues were being discussed in the 14th century," says Professor Simo Knuuttila at the University of Helsinki. "This makes a huge difference to the way we view history. If you want to understand historical and conceptual developments, you need to consider the social settings for the original discussions. And the social settings for the 14th and 17th century were very different."

A new ESF network, *Early Modern Thought* (EMT), hopes to correct this skewed picture of history by re-examining the period 1300 to 1600. "The overall goal of the network is to replace the established paradigm of a great Renaissance divide between medieval and modern thought with a less rigid model," says Knuuttila, the network's chairman. "This falls naturally within the ambit of the ESF because this objective can be achieved only by blending expertise from a variety of disciplines including the history of logic, language sciences, natural sciences, ethics, politics, metaphysics and theology."

For network details see page 49

Mining Europe's economic potential

J. de Bremond d'Ars

Chalcopyrite – *a major ore mineral for copper.*

A new ESF scientific programme could help Europe capitalise on the economic potential of its metal deposits, making industries dependent on copper and other ores less vulnerable to swings in world metal prices.

Although the region is a significant producer of minerals – for instance, it accounts for nearly 8% of the world's copper production, a market worth around $35 billion a year – it remains a net importer of metals. However, research indicates there could be large untapped deposits of ores hidden below the surface.

"Mining companies have already discovered the major concentrations of ore by surface investigations but possibly much larger deposits lie at depth under the sediment thus out of sight," says Derek Blundell at the University of London, chairman of the Foundation's new *Geodynamics and Ore Deposit Evolution* (GEODE) programme. "If we had a better understanding of how and why mineralisation forms at specific times and locations, we would be in a stronger position to develop models to predict where these bigger, undiscovered deposits lie. This is the main issue that GEODE will address."

A lot of the groundwork has already been done by previous ESF initiatives, notably the Foundation's *European Geotraverse* and *EUROPROBE* programmes, which have provided unprecedented insights into the Earth's deep geology and lithosphere. Europe also has extensive expertise in the fields required to understand fluid-mineral interactions, including experimental geochemistry, petrology, rock formation and mineral physics. In fact, two of the most important qualitative techniques for fluid inclusion analysis – microthermometry and the Raman microprobe – were originally developed and commercially applied in Europe.

More crucially, the diversity of the region's geology, including several tectonic provinces that span the full spectrum of geological time, provides an ideal test-bed for investigating 'metallogenesis' or the evolution of ores.

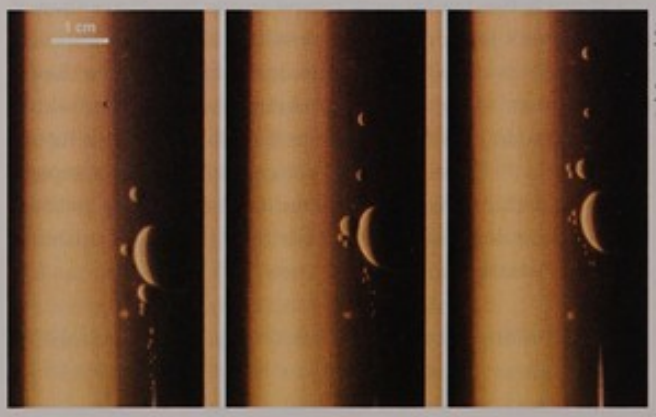
So why have European researchers failed to crack the question of metallogenesis and fallen behind their counterparts in the USA, Canada and Australia? "Research into mineral deposits in Europe has been less cohesive than in these countries," explains Blundell. "This isn't because of a lack of technical ability or expertise, but because there has been less emphasis on interactions between industry and scientific institutions. There isn't a structure for this type of collaboration – mining companies find it hard to identify centres of excellence in universities."

To overcome this problem, one of GEODE's main objectives is to establish closer links between industry and academia. A key weapon in this strategy will be to set up a database that will bring together information on at least 50 major mineral deposits in Europe, including details of deposit types, their tectonic settings, economic potential and other information. This will be complemented by a research bibliography and information service. Managed by the Minerals Industry Research Organisation (MIRO), the system will be available to researchers and industry using standard laptop computers.

In terms of the research planned, the five-year programme will cover four main issues. One of these will be an analysis of the dynamic processes that create the major body forces and control the principal thermal regimes within the lithosphere. "These create the conditions for melting, directly giving rise to magmatic mineralisation, but also producing a major source of mineralising hydrothermal fluids."

The chemical and isotopic evolution of magmas and fluids will also be examined, shedding light on the factors that govern the locations of individual ore bodies, their size, grade and individual characteristics. Other facets of ore evolution that will be investigated will include the influence of small-scale localised events, such as interactions between host rocks and fluids, and the systematic geochronology of deposits, using state-of-the-art techniques to provide high-resolution dating of ore-mineral precipitation. The research will focus on five mineral provinces which contain world class ore deposits: the Alpine-Carpathian Chain, south-western Variscides, basin-hosted deposits in Ireland and Poland, the Urals mineral province and the Fennoscandian Shield Pre-cambrian province.

For programme details see page 39



J. de Bremond d'Ars

Simulation experiments showing that sulphides can be transported efficiently in normal magmatic systems.

Assessing the impact of GM plants

Genetically modified (GM) plants are being field tested and commercialised in Europe while concerns are being expressed about their impacts on the environment and the validity of data from risk assessments.

A new ESF programme, *Assessment of the Impacts of Genetically Modified Plants*, approved in 1998 for a January 1999 launch, is designed to address these and other questions. "To date, Environmental Impact trials have often been on a small scale and thus do not necessarily reflect the impact that full farm scale commercialisation will have. Secondary and indirect effects of transgenes have not always been studied for their impact on biodiversity," says Dr Jeremy Sweet, the programme's Chairman, at the National Institute of Agricultural Botany, Cambridge. "We need to expand our knowledge of their possible interactions between different GM crops and the environment as a whole. We need real data, not theories."

Although large-scale releases occurring in North America provide some data on the impacts, Europe has different patterns of agricultural production and different interactions between agriculture and the environment. Some GM crops will result in changes in agricultural systems, which can have an immediate impact. The programme will bring together risk assessment research groups in Europe specialising in the genetics, ecology, pathology and agronomy of GM plants and their wild relatives. Botanical and ecological institutions will be involved in order to provide insights into the significance of gene flow and introgression. The programme's members will work closely with the biotech companies developing GM plants so as to scrutinise their risk assessment data.

"Private companies have been very active in assessing their products for potential risks and have produced very extensive research information. They obviously don't want to make a massive investment with their eyes closed. One of our roles will be to independently assess this information."

The team will focus primarily on GM crops that are being field tested and commercialised such as oilseed rape, sugar beet, maize and wheat. "Every GM trait has to be studied on a case-by-case basis as the risks differ enormously. Some modifications can be considered lower-risk (eg. herbicide tolerance genes) while others are considered higher-risk (eg. pest and disease resistance, and stress tolerance genes)."

For programme details see page 38

JB Sweet

Monitoring coastal wild sea beet populations for genes from sugar beet seed crops on the Italian coast

Atomic key to new materials

Academic and industrial researchers from across Europe are teaming up to help maintain the region's worldwide lead in the study of materials and processes that depend on the behaviour of individual atoms. If successful, the ESF-funded programme could lead to more advanced catalysts and other novel applications spanning fields as diverse as mineralogy and biochemistry to the creation of semiconductors.

Still a very young branch of science, originally kick-started by the Nobel laureate chemist W Kohn in the early 1990s, 'atomistic research' involves modelling and manipulating atomic configurations and their chemical bonds to an extremely high level of accuracy, typically to at least one part per million. In many instances, this can lead to important industrial advances. For example, scientists found that if tiny fractions of gold – equivalent to about one-tenth of an atom – are added to the surface of a nickel catalyst, its performance is significantly improved and the threat of carbon poisoning avoided.

Until recently, researchers in this field have been constrained by their inability to observe and model the behaviour of individual atoms using mainstream laboratory technology. Modelling non-standard atomic configurations, which often hold the greatest practical possibilities, has been a particular difficulty. However, massive leaps in affordable computer processing power over the last few years have enabled scientists to overcome this problem. Using sophisticated software programmes, they can simulate and solve quantum mechanical equations for hundreds of atoms.

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"Calculations based on quantum mechanical first principles yield more accurate results and produce greater insights than traditional empirical methods," explains Professor Volker Heine, at the University of Cambridge. "You can find out what really happens in experiments by recreating scenarios and testing them. You can identify the intermediaries in reactions, the heat of reaction and the barriers separating the intermediaries. Once you know this, you can devise ways to bring down the barriers and design new materials."

Heine is the chairman of a new ESF programme, *Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces* (STRUC). Launched in 1998, the main aim of the programme is to foster collaboration between approximately 300 atomistic researchers in Europe, notably those working at the computational end of the spectrum, and "to transport their knowledge into industrial laboratories," says Heine. "Although Europe has a slender lead over the USA and Japan in this field, its research is very fragmented. We need to establish networks to incorporate our advances and avoid duplication. Due to the complexity of this subject, it is almost impossible for a single laboratory to make headway on its own. Sharing and co-developing computer code, for example, is very important."

The programme will have a number of 'networking' features, including workshops, secondments and an electronic newsletter. Specific issues that will be addressed in the workshops will range from molecular processes on oxide surfaces to the contribution of *ab initio* electronic structure simulations to understanding the mechanical strengths of materials.

For programme details see page 41

Tackling corrosion

A new series of EURESCO conferences could help power plants and other industries combat corrosion, a problem that costs them billions of euros each year.

Called *Surface Engineering for the Protection of Metals and Alloys*, the series is designed to shed new light on the basic processes that cause and prevent corrosion. "Most conferences focus on techniques to protect metals against corrosion, for example by applying coatings to steel and other materials, but neglect the fundamental science that underpins this process – the physics, chemistry and materials science," says Professor Hans J. Grabke, at the Max-Planck Institut für Eisenforschung in Düsseldorf.

"We want to gain deeper insights into what happens at the surface during corrosion and how protective coatings interact with the metal. For example, a number of metals and alloys, such as steels and aluminium, are protected by natural oxide layers but we don't know how dense and of what composition these layers have to be to make them impermeable to aggressive components in the atmosphere, such as sulphur dioxide. Also, to know what factors on the surface inhibit or prohibit protective films from adhering properly is most important."

Particular emphasis is being placed on high-temperature corrosion in petrochemical facilities, power plants and other industrial sectors. "Metals are unstable in any atmosphere, but particularly so in high-temperature environments. In power plants, for instance, temperatures can range from 500° to 700°C."

The first conference was held in August 1998 and brought together scientists from both academic and industrial backgrounds. It covered issues such as protection by passive films and the positive and negative effects of atomic surface segregation, i.e. atomic aspects of corrosion and protection. The next conference is intended to cover properties and application of coatings, ultrathin to thicker (1nm – 100 µm) dimensions.

For more information on EURESCO conferences see page 54

Every year the ESF brings together thousands of scientists from across Europe and other parts of the world

Fostering pan-European collaboration

to share information and ideas. In many instances, these events spark off new lines of thinking and long-term scientific collaborations.

ESF's Europe: *22 countries and 65 Member Organisations*

ESF's membership expands eastwards

The ESF's ability to tackle pan-European problems was given a further boost when it acquired its first members from the Czech Republic, bringing the total number of members in central and eastern Europe up to seven. The Czech Academy of Sciences and the Czech Grant Agency, both major players in national and European research, joined the Foundation in November 1998.

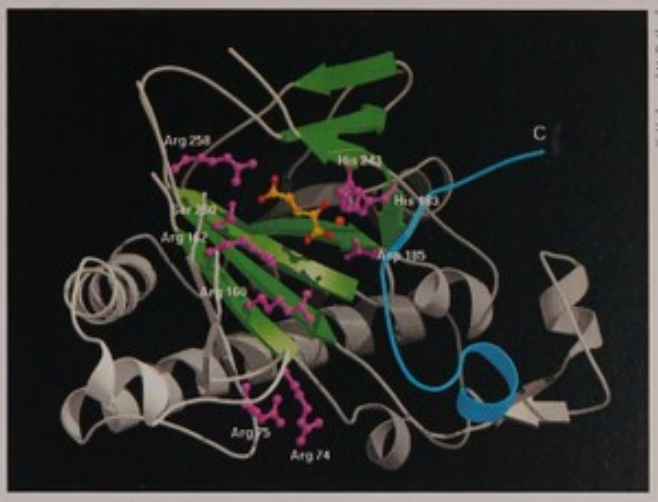
Agencies from other CEE countries with ESF membership include Hungary, Poland and Slovenia. Overall, the Foundation has 65 members in 22 European countries. "Our doors are always open to new entrants provided they satisfy our core criteria," says Tony Mayer, Head of the ESF's Secretary General's Office. "These include evidence that they make scientific decisions free from political pressures, that they are significant supporters of research in their country and that they will contribute, through their research communities, to all the activities of the ESF 'family'."

EURESCO's future strengthened

The future of the ESF's European Research Conference (EURESCO) programme is looking more secure after the Foundation repositioned the scheme and was able to raise additional funds for it.

Similar to the concept of the USA's Gordon Conferences, one of the main attractions of EURESCO is that it revisits particular subjects over the course of several years, enabling researchers to update each other on their work in an informal setting and develop long-term academic relationships and collaborations. However, the programme's reliance on winning funding from the European Commission twice a year has meant that it has been difficult to plan long-term series of conferences as funding was not necessarily guaranteed within the Framework Programme and also did not cover many topics within the humanities and much of the social sciences.

To overcome this problem, and in particular the scheme's dependence on being successful in EC competitions, the ESF has introduced a number of changes to the way EURESCO is managed and funded. A dedicated management committee, for example, has been set up in which links with the Foundation's Standing Committees have been enhanced. More crucially, the ESF has allocated extra funds for the scheme and approached Member Organisations for further support, either financially or in kind, for example by agreeing to host individual conferences. The response to date from the ESF Member Organisations has been extremely encouraging. The Foundation has been able to increase the number of EURESCO conferences in 1999 by more than 30% to 40, a figure set to rise even further as the new funding arrangements come on stream later in the year. This will be based on Open Calls with external peer review to ensure that only excellent science is supported, coming from a 'bottom-up' process.



K. Harlos and M. D. Lloyd

Unravelling the biochemistry of metals
Iron-containing enzymes use gaseous dioxygen to generate highly reactive intermediates that can be used in the synthesis of antibiotics as well as in other biological processes.

METBIO strikes gold

The potential to create novel medicines and other products using metal ions has been given a boost by a recently completed ESF programme on the *Chemistry of Metals in Biological Systems* (METBIO).

Metal ions play a key role in biochemistry by stabilising proteins through their presence in the centre of large molecules and by transporting the electrons needed to catalyse a wide variety of reactions. Calcium is the most prevalent in humans and other vertebrates, enabling the formation of bones, but there are many other metal ions that are equally important in different forms of life. Potassium and sodium, for example, are vital for transmitting nerve impulses.

Although work in this arena had been moving rapidly forward in Europe when the METBIO programme was started in 1991, research was fragmented, geographically and in terms of the disciplines operating in this field. One of the key aims of the programme was to unite these elements and spark off new lines of thinking through a more collaborative approach, which is precisely what happened.

Important activities have included the support of several large European conferences on broad themes such as the EUROBICs, as well as a series of more specialised workshops. Workshop themes have ranged from *Type-1 Sites in Copper Metallo-proteins and -enzymes*, through *Magnetic Spectroscopy of Bioinorganic Transition Metal Centres*, and *Iron-Sulphur Proteins*, to various issues of *Metals in Drugs and Medicine*. A workshop on electrochemistry, for instance, exploited research in theoretical physics to develop techniques for imaging and manipulating materials at the molecular level. Another meeting looked at the role of protein-derived free radicals in metal enzymes. "It was realised there were a lot of biological systems sharing these properties and they were brought together by the workshops," says Jens Ulstrup at the Technical University of Denmark, vice-chairman of the programme. Free radicals play an important part in facilitating reactions alongside metal ions within enzymes. It has now been discovered that there are many enzymes where free radicals are involved and these can be exploited to synthesise medicines such as antibiotics, as well as other products.

"There were other workshops on synthesising molecules that can emulate biological functions. One of the important things we learned was that chemists can impose unusual properties onto the metal by a very sophisticated synthesis of the organic complex of atoms surrounding it, the 'ligand'." With further work on synthesis, it may soon be possible to fine tune chemotherapy treatments for cancer, which use toxic heavy metal ions, so that the side-effects are minimised and the impact on the malignant cancer cell is maximised.

A particularly successful activity has been the programme's association with the organisation of *Advanced Courses on the Chemistry of Metals in Biological Systems* held annually at the Université Catholique de Louvain, Belgium. Some 500 PhD students and others have completed the course over the years and in this way the programme has helped to extend the coherence and cooperation in European bioinorganic chemistry research into the next generation of researchers.

"Overall, I think a lot has been achieved from a relatively small amount of funding," says Ulstrup.

Deep bacterial knowledge

The discovery of vast colonies of bacteria over 750 metres beneath the sea floor, thriving in temperatures as high as 100°C, not only promises to deepen our understanding of how fossil fuels were formed but could also lead to new industrial processes and further advances in biotechnology. In fact, biotechnologists have already used bacteria from hydrothermal environments to create the enzymes used for polymerase chain reactions in molecular genetics.

Europe has extensive experience in deep sea research but the people working in this field, including microbiologists, geochemists and mineralogists, have tended to operate in isolation. The ESF's new network, *Exploring the Deep Subseafloor Biosphere*, aims to pull them together and link up with US and Japanese groups. It will also develop the necessary technology and techniques for *in situ* experimentation. Specific scientific objectives include determining the extent, distribution and diversity of the deep biosphere in marine sediments and rocks; and assessing the potential for developing new biotechnological and energy sources. The three-year network was approved by the ESF's Executive Council in September 1998.

For network details see page 48

EMaPS cruises ahead

The ESF's Boards for European Marine and Polar Science (EMaPS) continued to make further headway during the year, co-sponsoring a major conference and publishing an important new plan on marine biodiversity.

In May 1998, EMaPS co-sponsored the *Third European Marine Science and Technology Conference*, held in Lisbon and attended by some 600 participants. Four of the conference's scientific sessions were co-organised by EMaPS, jointly with DG XII-MAST. One of these sessions focused on ways European institutions could participate in the proposed Integrated Ocean Drilling Program, including future research priorities. "An efficient European contribution to ocean drilling implies a coordinated approach between European participants so that one can clearly identify what can be supported by Member States and what can be supported at EU level," noted Christian Patermann, Director of RTD Actions in the EC's DG XII-D unit, in his introductory speech.

Besides looking at the role of Europe in future ocean drilling activities, the conference highlighted several research priorities. These included extreme environments in Europe, integrated coastal zone management, research in fisheries and aquaculture, marine science policies and technologies.

Another highlight of 1998 was the widely acclaimed publication of EMaPS' second position paper, *A European Science Plan on Marine Biodiversity*. The main thrust of the 20-page document is to set out the scientific conditions needed to sustain Europe's marine biodiversity. This includes describing and quantifying the region's biodiversity, analysing natural and man-made impacts, and developing the necessary tools to sustain Europe's marine resources, living and non-living.

In addition, at the request of the Council of Europe, the Marine Board prepared a report entitled *Marine Science and*

Technology: challenges for Europe's future, which was subsequently used as the basis for a Resolution of the Council of Europe at its Parliamentary Assembly in September 1998. The Resolution recognised the need to promote a true European policy for the sea and the fact that marine science and technology should be essential in the development of such a policy.

Polar Board initiatives included co-sponsoring workshops *on Land-Ocean Interaction in the Russian Arctic*; *New Polar Technology*; and the *Nordic Seas*. In addition, progress was made in the setting up of a meta-database of European polar research facilities and in finalising an EMaPS database of current European national research programmes.

Following an ESF review of its role and strategy, EMaPS is currently investigating ways to form closer links with other parts of the Foundation, as well as external organisations. In the future it will primarily focus on strategy, harmonising existing marine and polar initiatives and giving these a clearer voice at a European level.

Heart of the north-south divide

A private research foundation has joined forces with the ESF's European Medical Research Councils (EMRC) to find out if there really are significant differences in the incidence of cardiovascular diseases between the north and south of Europe.

Anecdotal evidence suggests there are sharp distinctions, with a few notable exceptions, but systematic research has not yet been carried out to verify these claims, let alone establish the reasons behind the differences. Diet and genes are the two most common explanations given.

To answer these questions, the privately funded European Foundation for the Advancement of Medical Research provided financial support for an EMRC workshop involving microbiologists, epidemiologists, mathematicians and heart specialists, amongst other experts in this field. "The main aim of the workshop was to establish a network of researchers and practitioners so we can get to the bottom of this issue by pooling our collective knowledge and expertise across Europe," says Ingrid Wünning, Scientific Secretary for the EMRC.

The ESF is currently talking to other private trusts and foundations about possible future partnerships.

For a full listing of 1998 exploratory workshops see page 53

Immigrant blues

Shifts in Europe's labour markets over the last 25 years have led to a sharp increase in unemployment and dependence on social security systems amongst immigrants. This was one of the findings flagged up at a EURESCO conference on *Migration and Development* held in Portugal in 1998.

"In Sweden, for example, major changes in the organisation of production of goods and services, mainly due to more widespread use of computers and other technologies, have led to fundamental changes in labour demand," explains the conference's organiser, Professor Tommy Bengtsson at the University of Lund. "Today's employees are expected to have a broader set of skills, including communication and interpersonal skills to operate as part of a team. Much more importance is attached to language skills which immigrants often don't have, especially if they come from outside Europe. Also, import competition has become harder, especially when it comes to labour intensive goods."

The net result is higher levels of unemployment particularly amongst immigrants. "This is a structural not a business cycle problem, since it also took place during the economic booms of the 1980s and since not only immigrants, but also poorly-educated parts of the indigenous population are facing similar problems. The situation is quite similar in many other European countries", says Bengtsson.

"In theory these people should have obtained jobs by negotiating lower wages but due to minimum wage legislation, collective agreements and other factors in the labour markets this is not a practical solution. Their alternative is either to rely on social welfare or to enter self-employment where they can get a reasonable income by increasing their number of working hours." Many are doing the latter. Unemployment is still high among immigrants. In Sweden, for example, as much as 40% of poorly-educated non-European immigrants are still unemployed after five years in the country.

For more information on EURESCO conferences see page 54

Appearances can deceive
This groundwater stream looks polluted but it is not. Some groundwater naturally contain sulphide and ferrous iron.

Combating water pollution

Around 90% of the world's fresh water is hidden underground, unfortunately out of sight also appears to mean out of mind when it comes to pollution of this key resource. Although the health risks of agricultural nitrates, for example, infiltrating groundwater are fairly well documented, the impact of other contaminants, such as antibiotics used to protect crops from microbial attacks, and metals from industrial and other sources, have been studied in less depth, if at all.

Even less is known about the long-term gestation of these pollutants. "One of the big problems with groundwater is that it can take decades for the toxicity of pollutants to become evident due to its slow turnover, relative to surface water in lakes," says Karsten Pedersen at the University of Göteberg. "We need to take a long-term perspective of groundwater to establish the movement and fate of pollutants and their relative risks to health and the environment.

"More crucially, we have to improve our knowledge of how toxic chemicals behave over time and how, if at all, they are eliminated from the subterranean environment. A better understanding of the catalytic mechanisms and biochemical strategies involved in biotransformations of groundwater pollutants would enable us to design less toxic and more readily degradable alternative industrial and agricultural chemicals. We could also use this information to combat incidents of chemical pollution."

The need to address these issues is particularly acute in Europe, where 50 to 70% of the region's drinking water comes from subterranean sources. "If you removed all the land in Europe, the region would be one big lake," says Pedersen.

A new ESF programme, *Groundwater Pollution* (GPoll), put forward by the Foundation's EERO Committee and chaired by Pedersen, has been set up to try and establish the causes and consequences of groundwater pollution, as well as preventative measures. Drawing on the collective expertise of researchers across Europe, the programme will look at how chemicals and radionuclides are transported through soils into groundwater and how they are transformed or immobilised by chemical reactions and microbial communities. To help pinpoint these pathways, new analytical tools will be developed, including biomarkers and multispecies test systems to assess the cumulative effects of pollutants.

GPoll will also investigate the long-term impact of small concentrations of toxic chemicals on micro-organisms, plants, animals and entire ecosystems. "The acute toxicity of many compounds to individual organisms is already known." A further objective will be to determine how the physical, chemical or biological transformation of pollutants can amplify or suppress adverse responses.

Armed with this information, which will be gleaned through workshops, fellowships and other networking devices, the researchers hope to identify remedial and preventative measures. "The ultimate aim is to feed our findings back to the producers and users of chemicals so that they can make both industry and agriculture increasingly safe," says Pedersen.

For programme details see page 40

As a non-governmental organisation,
with access via its Standing Committees
and Member Organisations to many
of Europe's leading scientists,

Advising on the best way forward

the Foundation is able to offer national
and supranational bodies impartial
and informed advice.
This is becoming an increasingly
important role for the ESF
and one we intend to develop further.

Thinking big

The ESF played an increasingly active role in the field of large-scale research facilities (LRFs) during 1998 using its status as a non-governmental body to provide independent advice on the scientific cases for creating new facilities and developing a blueprint for a new European Social Survey.

At the Foundation's Annual Assembly, a discussion panel also considered the future of LRFs in Europe. It was widely agreed that these types of facilities are becoming more important, growing in both numbers, size and scientific scope. However, although the ESF's involvement in this field has mirrored this expansion, with all its Standing and Associated Committees participating in LRF initiatives, it was concluded that the Foundation should develop a more coherent strategy and take on broader responsibilities. One possibility is for the ESF to act as a 'standing forum' for Member Organisations, monitoring LRF problems and needs.

Synchrotron radiation

At the request of the UK Medical Research Council and working to a tight timetable, an ESF expert panel has produced an independent and authoritative report on 'the needs for European synchrotron radiation and related beam-lines for biological and biomedical research'.

One of the major advantages of synchrotron radiation is that it can produce X-rays over a wide range of wavelengths, enabling it to be used to identify structures of both large and small molecules. It has proved particularly valuable for determining biomolecular structures of proteins, information that pharmaceutical companies need in order to design effective drugs. As the human genome project throws up new proteins (and new therapeutic possibilities), the demand for synchrotron radiation is likely to accelerate.

"The field is extremely competitive, fast moving and characterised by relatively short experiments," noted the review panel chaired by Professor Gunnar Öquist, ESF Board member and Secretary General of the Swedish Natural Sciences Research Council. However, biologists have access to only eight synchrotron facilities in Europe. To overcome this restriction, the review panel made several recommendations, including the adoption of a twin-track system at facilities in order to give researchers quicker access. The panel also strongly endorsed plans to upgrade and build new synchrotron facilities and advised that all new beam-lines for protein crystallography should have 'undulators'.

In order to follow up on the review report and recommendations, the ESF organised a meeting with Member Organisations in the Spring of 1999 and is currently looking into setting up a 'protein' monitoring group to keep a close watch on developments in synchrotron radiation as well as in alternative techniques.

For publication details see page 55

Neutron sources

Roger Eccleston, Rutherford Appleton Laboratory

ISIS spallation neutron source
Instruments at one of Europe's world-class large research facilities

As complementary techniques to x-ray scattering, neutron diffraction experiments and neutron spectroscopy provide fundamental information on the atomic structure and kinetic properties of matter and materials. But additional funding and support is needed to upgrade existing sources and to build new neutron sources if Europe is to avoid a 'neutron shortage'. This is one of the main conclusions of the ESF's continuing studies into the case for a next-generation European neutron source being carried out by the Standing Committee for the Physical and Engineering Sciences. In 1998, two important technical reports were published by the Foundation. One was a survey of existing neutron facilities and user communities undertaken by the European Neutron Scattering Association (ENSA), while the other provided a European and global forward look on future neutron facilities for science and research and was jointly published by the ESF and the OECD Megascience Forum. Key messages emerging from the reports include the identification of a need for significantly more high-flux beam-time to meet current demands from science and research, and of the prospect that Europe's neutron sources could plummet to one third their current level if decisions for new facilities are not made within the next few years.

The reports provide strong evidence of the need to build a European Spallation Source (ESS) either to replace or succeed existing world-class facilities in Grenoble (ILL) and Oxford (ISIS). In fact, the European project has already been overtaken by American plans for a next generation facility (the SNS facility). "Europe is playing the leading role in the world in neutron research and we wouldn't like to lose it. If we get ESS, we won't," says Professor Norbert Kroó, a Hungarian delegate to the Megascience Forum and member of the Foundation's PESC Standing Committee.

Although small- and medium-sized synchrotron facilities are cheaper to build and operate, says the ESF/OECD report, they are unsuitable for many investigations which can only be performed with neutron beams. The report also advocates investing a 'significant fraction' of any funds earmarked for neutron sources in new instrumentation. This is considered particularly important for new techniques at pulsed sources.

In publishing the two reports the ESF's main concern was to broaden the basis for discussion, assessment and planning of future research and neutron sources. In particular, these expert assessments are contributing to ongoing discussions within the ESF's Standing Committees for Physical and Engineering and Life and Environmental Sciences as they finalise their own assessment of the scientific case for a European Spallation Source.

For publication details see page 55

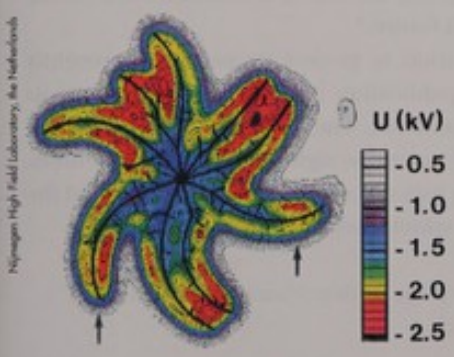
High tesla science

A European laboratory for 100 tesla science (100T science Eurolab), made up of several existing or new facilities across Europe, could lead to significant advances in research in semiconductors, low-dimensional structures, phase equilibria and transformations, as well as in certain branches of chemistry and other fields, claims a new ESF study report.

Currently, Europe has six laboratories capable of delivering 50-73T magnetic fields in pulses of 10-20 msec but none that can produce long 100T pulses. There are also numerous static-field magnets but these cannot exceed 45T due to the heat produced

"If higher field pulsed magnets are built, interesting and unanticipated science will undoubtedly flow from them," says Mike Springford of Bristol University, chair of the scientific committee that coordinated and produced the report, *The Scientific Case for a European Laboratory for 100 Tesla Science*.

The report, which considers all aspects of high magnetic fields, concludes that a long-pulse 100T facility should be built in Europe by 2005. The development of higher static field magnets, around 50-60T should also be investigated, it advises.



Nijmegen High Field Laboratory, the Netherlands

Scientific attraction *Electrical discharges in an applied magnetic field showing fractal structure and the clear bending due to the Lorentz force exerted by the magnetic field on the electrical charges.*

The study's results were discussed by representatives of interested ESF Member Organisations at a 'round table' meeting in Grenoble, France where considerable interest was shown in the possibility of developing a networked or 'distributed' facility. The ESF's next step is likely to involve the carrying out of a semi-quantitative survey of the envisaged size of the user community in Europe and its facility needs and the outlining of a concept, including a cost estimate, for a 'distributed' 100 tesla science Eurolab.

For publication details see page 55

Social survey

Photo photothèque

The methodological foundations and terms of reference for a pioneering survey of social and political views across Europe are being laid by an ESF-supported team. After some two years in preparation by researchers from 18 European countries, the *Blueprint for a European Social Survey* (ESS) is due to be published in June 1999.

The ESS would provide a unique European comparative database of citizens' values and attitudes in the face of political, economic and social change and would fulfil the equivalent need for the social scientist that the 'large infrastructure facility' does for the natural scientist. The 'blueprint' steering committee, chaired by ESF vice-president Professor Max Kaase, believes that designing a research instrument to produce data addressing European perspectives, rather than constructing data from existing, mainly national, sources, will prove to be an economical and reliable strategy for future research.

Under the survey, independent cross-sectional samples of people would be interviewed every second year with a common set of core questions being asked in each wave. In addition a range of 'module topics' would also be selected from which comparative analysis could provide both research and policy insights into topics such as social mobility, values, quality of life, social inequality and xenophobia.

A particular challenge taken up by a dedicated Methodology Committee has been to develop a common methodological framework that can accommodate national nuances without compromising the scientific validity of the data.

If all goes according to plan, the first wave of the survey could start in 2001.

For more information see page 44

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Optimising nuclear physics research

Europe has a well-balanced network of large- and small-scale facilities for nuclear physics, placing it in a strong position to make further breakthroughs in this field. Current hot topics include the race to identify the quark gluon plasma and understand the hadronic interaction. To help nuclear physicists in Europe keep at the forefront of these issues, the Nuclear Physics European Collaboration Committee (NuPECC), an ESF Associated Committee, has put together a series of detailed recommendations, based on widespread discussions with members from 15 countries and nearly 100 nuclear physicists from across Europe.

Covering six main branches of nuclear physics, from nuclear structures under extreme conditions to neutrino physics and fundamental interactions, the 144-page report, called *Nuclear Physics in Europe: highlights and opportunities*, provides a scientific case for supporting these areas and suggestions as to how they should move forward. Specific recommendations include:

- National funding agencies should be involved in the planning stage of new facilities. NuPECC can help in this process.
- A study group should be formed to assess the main options for second generation radioactive ion beam facilities in Europe.
- The possibilities of large-scale computing at a European level should be investigated to support research into nucleus-nucleus collisions and the phase transitions of nuclear matter. Creating a heavy ion detector should also be a top priority.
- Build a high luminosity and high-duty cycle electron facility of at least $\sqrt{s}$=7GeV.
- Construct an underground accelerator for background-free measurements of important astrophysical cross-sections at thermal energies.

The task of prioritising these recommendations and establishing their relative merit compared to competing demands for investment in other areas of physics is being tackled in 1999 by a special working group of the ESF's Standing Committee for Physical and Engineering Sciences (PESC).

For publication details see page 56

Jodrell Bank

Jodrell Bank
One of Europe's radio astronomy facilities provided protection by the ESF-Iridium agreement.

Alleviating an astronomical threat

A threat to radio astronomers' ability to study the births and deaths of stars and other interstellar events has been partly lifted following an agreement with one of the world's biggest telecommunications companies, signed by the ESF on behalf of its Associated Committee on Radio Astronomy Frequencies (CRAF).

Radio astronomers were concerned that emissions from the satellites of Iridium, a new global mobile phone system, would pollute the 1610.6–1613.8 MHz band, which they use to investigate the distribution of the hydroxyl radical, one of the most common interstellar molecules. After intense negotiations, Iridium agreed to guarantee 'unpolluted' observation time in this frequency band round the clock, starting 1 January 2006. Between May 1999 and January 2006 radio astronomers will have clear skies for hydroxyl observations only during restricted periods. Detailed sharing arrangements are to be negotiated during 1999.

"The number of cases of interference to radio astronomy is growing steadily," commented Dr Jim Cohen, CRAF's chairman. "Unless our needs are taken into account in the early stages of designing satellite systems, radio astronomy could face a difficult future."

CRAF's determination to protect its patch was recently underlined by the publication of the second edition of its radio astronomy handbook. The 150-page booklet sets out the key threats and 'scientific rights' of radio astronomers, as well as providing lists of European observatories and the frequency bands in which they operate.

Visit the CRAF home page at http://www.nfra.nl/craf

Tips to sharpen FP5's efficiency

As part of a wide-ranging follow-up to its 1996 position paper on the European Commission's plans for a Fifth Framework Programme, the ESF put forward in 1998 a number of suggestions to the Commission for the management of the new Programme.

"The aim of the ESF was to highlight the concerns of Europe's scientists and propose possible solutions where there are perceived to be problems," explains Tony Mayer, Head of the ESF's Secretary General's Office.

Submitted as an ESF Memorandum to the Colloquium of European Research Ministers in April 1998, the document covered a broad range of issues, from selecting and evaluating candidate proposals to peer review systems and plugging potential 'funding gaps'. Particular emphasis was placed on transparency.

"The success or otherwise of the Fifth Framework Programme," notes the document, "depends on the full engagement of the European research community. This relies on a clear and transparent management approach at all levels, including overall strategic management and the assessment, administration and evaluation of projects. In addition, it is important that results are disseminated and exploited fully in order to meet the overall objectives of the Framework in terms of strengthening the EU's industrial competitiveness and supporting other policy objectives."

The ESF's checklist of recommendations for managing FP5 included:

- set clear and coherent objectives, indicating the topic's coverage and attendant rationale;
- External Advisory Groups (EAGs) should deal with strategic, not operational, issues;
- to promote transparency, EAG and PMC members should be named;
- 'concerted actions' should be extended to include groups of projects, not just groups of scientists;
- explain selection criteria in more detail;
- provide detailed feedback on submissions to enhance the quality of future proposals;
- introduce pre-screening of proposals to reduce unnecessary volume;
- place greater emphasis on pre-planning of individual steps in each project and on monitoring key outputs.

Rural photothèque

Healthy outlook

A set of research priorities for investigating the impact of the environment on health is due to be presented to the Third Ministerial Conference on Environment and Health in London in June 1999.

Developed after extensive consultation with more than 200 scientists, from neurologists to epidemiologists, and short-listed at a consensus conference involving researchers, NGO representatives and policy makers, the priorities cover five specific research areas: air quality; water quality and drinking water; environmental effects on cognitive functions; children and unintentional accidents; and climatic change and stratospheric ozone depletion. To underpin this work, the document recommends that methodologies for assessing risks should be improved and that greater insights into social variations in health are also required, along with how people perceive the impact of the environment on their health.

Several generic research issues are also raised. These include the need to develop a meaningful set of environment and health indicators to monitor, compare and prioritise environment and health benefits. Efforts to improve the comparability of data should also be improved, claims the document.

The driving force behind these recommendations was the 1994 Helsinki Declaration on Action for Environment and Health. This not only identified the key environmental threats but also recognised that policy makers required further research to help them take preventative and remedial action. The Declaration suggested that the ESF, WHO and EC work together to establish gaps in current research and examine how these could be filled. The ESF provided the main scientific input through its Member Organisations while the WHO and EC were able to give a vital policy dimension to the initiative.

Commenting on the proposed research priorities, Sir Dai Rees, the ESF's President, said: "Without this knowledge, there is a danger that legislation could misdirect resources towards problems that have little real impact on health."

US–ESF space collaboration formalised

Scientists from both sides of the Atlantic have teamed up to formalise the principles for conducting joint space missions. After studying 13 US-European space missions over the last 30 years, the ESF's European Space Science Committee and the Space Studies Board of the US National Research Council have drawn up a set of recommendations for future collaborations to ensure greater consistency and cost-effectiveness. Called *US-European Collaboration in Space Science*, key recommendations of the report propose that:

- there should be a compelling scientific reason for any initiative, validated by an independent panel of experts;
- scientists, engineers and managers should work closely together on the project;
- there should be clearly defined milestones and implementation agreements (a template for which is provided in the report);
- the project should be periodically reviewed by independent specialists;
- NASA's science office funding should include international budget lines to support important peer-reviewed, mid-scale international activities.

Copies of the report are available from the ESF Communication and Information Unit, price FF175.
For publication details see page 55

Irish infrastructure initiative

The Republic of Ireland's drive to strengthen its research base has been given a helping hand by the ESF. During 1998, the Irish Higher Education Authority (IHEA) asked for the Foundation's assistance in putting together international peer review panels to assess applications for a new innovation programme, initially funded to the tune of 4 million IEP.

Due to the country's relatively small population, the IHEA was keen to look beyond its national boundaries to ensure that proposals were independently assessed. Drawing on its network of European contacts, spanning all scientific disciplines, the ESF compiled a list of appropriate panel members. These were taken up by the IHEA and, after a successful pilot run, the Authority increased the amount earmarked for the research programme to 180 million IEP a year, again using international peer review as its principal assessment mechanism.

Encouraging science entrepreneurs

Licensing research findings to private companies, in the right circumstances, may be a more effective way to turn ideas into commercial realities than always trying to establish businesses and to attract funds from venture capitalists.

This was one of the conclusions of the second ESF workshop on how scientists can form partnerships with the private sector. Held in Jülich, Germany, in December 1998, the workshop analysed how to identify a fruitful 'infant venture' and when it was ripe to be turned into a commercial application.

One of the biggest hurdles to answering these two questions, agreed delegates, who included scientists and industry representatives, was the lack of entrepreneurialism amongst researchers. Various ways were suggested to cultivate this skill in the academic system, including the British model, which incorporates competitive training in both undergraduate and postgraduate courses; and summer schools, an approach that has been successfully applied in Germany. Both students and professors needed to be trained, claimed the delegates.

Another workshop on *Nurturing the Infant Venture*, took place in London in May 1999. A science policy briefing paper outlining the workshops' main recommendations is likely to be produced towards the end of the year.

Operational activities

The following pages give details of the ESF's operational activities in 1998 including a brief description of how the Foundation works, Committee and Board membership, a comprehensive listing and contacts for our scientific activities, and the year's financial statements.

Contents

ESF member organisations

The ESF currently has 65 Member Organisations in 22 countries.

Austria

Fonds zur Förderung der wissenschaftlichen Forschung in Österreich
Austrian Science Research Fund
Weyringergasse 35 • A-1040 Wien

Österreichische Akademie der Wissenschaften
Austrian Academy of Sciences
Dr. Ignaz-Seipel Platz 2 •
A-1010 Wien

Belgium

Fonds National de la Recherche Scientifique
National Fund for Scientific Research
5, rue d'Egmont • B-1000 Bruxelles

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
Fund for Scientific Research - Flanders
5 Egmontstraat • B-1000 Brussel

Czech Republic

Akademie věd České republiky
Academy of Sciences of the Czech Republic
Národní 3 • CR-117 20 Prague 1

Grantová agentura České republiky
Grant Agency of the Czech Republic
Národní 3 • P.O. Box 1081 •
CR-111 42 Prague 1

Denmark

Det Kongelige Danske Videnskabernes Selskab
Royal Danish Academy of Sciences and Letters
H.C. Andersens Boulevard 35 •
DK-1553 København V

Statens Humanistiske Forskningsråd
Humanities Research Council

Statens Jordbrugs-og Veterinaervidenskabelige Forskningsråd
Agricultural and Veterinary Science Research Council

Statens Sundhedsvidenskabelige Forskningsråd
Medical Science Research Council

Statens Naturvidenskabelige Forskningsråd
Natural Science Research Council

Statens Samfundsvidenskabelige Forskningsråd
Social Sciences Research Council

Statens Teknisk-Videnskabelige Forskningsråd
Technical Research Council

The administrations of the six research councils are assumed by:
Forskningsstyrelsen
Danish Research Agency
Randersgade 60 •
DK-2100 København Ø

Finland

Suomen Akatemia/Finlands Akademi
Academy of Finland
P.O. Box 99 • Vilkonvuorenkatu 6 •
SF-00501 Helsinki

Suomen Tiedeakatemiain Valtuuskunta / Delegationen för Vetenskapsakademierna i Finland
Delegation of the Finnish Academies of Science and Letters
Mariankatu 5 • SF-00170 Helsinki

France

Centre National de la Recherche Scientifique
National Centre for Scientific Research
3 rue Michel-Ange •
F-75794 Paris Cedex 16

Commissariat à l'Energie Atomique / Direction des Sciences de la Matière
Institute for Basic Research of the Atomic Energy Commission
31-33 rue de la Fédération •
F-75752 Paris Cedex 15

Institut Français de Recherche pour l'Exploitation de la Mer
French Sea Research Institute
Technopolis 40
155, rue Jean-Jacques Rousseau •
F-92138 Issy-les-Moulineaux Cedex

Institut National de la Santé et de la Recherche Médicale
National Institute for Health and Medical Research
101, rue de Tolbiac •
F-75654 Paris Cedex 13

Germany

Deutsche Forschungsgemeinschaft
German Research Society
Kennedyallee 40 • D-53175 Bonn

Hermann von Helmholtz-Gemeinschaft DeutscherForschungszentren
Association of National Research Centres
Postfach 20 14 48 • Ahrstrasse 45 •
D-53175 Bonn

Konferenz der deutschen Akademien der Wissenschaften
Conference of Academies of Arts and Sciences
Geschwister-Scholl-Strasse 2 •
D-55131 Mainz

Max-Planck-Gesellschaft
Max Planck Society
Postfach 101062 •
Hofgartenstrasse 8 •
D-80539 Munich

Greece

ΕΘΝΙΚΟ ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ
National Hellenic Research Foundation
48 Vassileos Constantinou Avenue •
GR-116 35 Athens

Hungary

Magyar Tudományos Akadémia
Hungarian Academy of Sciences
Roosevelt tér. 9 • H-1051 Budapest

Országos Tudományos Kutatási Alap
Hungarian Scientific Research Fund
Konyves Kalman Krt. 48-52 •
H-1087 Budapest

Iceland

Rannsóknarráð Islands
The Research Council of Iceland
Laugavegi 13 • IS-101 Reykjavik

Ireland

Enterprise Ireland
Glasnevin • IRL-Dublin 9

Health Research Board
73 Lower Baggot Street • IRL-Dublin 2

Royal Irish Academy
19 Dawson Street • IRL-Dublin 2

Italy

Consiglio Nazionale delle Ricerche
National Research Council
Piazzale Aldo Moro 7 •
I-00100 Roma

Istituto Nazionale per la Fisica della Materia
National Institute for the Physics of Matter
Corso Perrone 24 • I-16152 Genova

Istituto Nazionale di Fisica Nucleare
National Institute for Nuclear Physics
Piazza del Caprettari 70 •
I-00186 Roma

The Netherlands

Koninklijke Nederlandse Akademie van Wetenschappen
Royal Netherlands Academy of Arts and Sciences
(Het Trippenhuis) •
(Kloveniersburgwal 27) • Postbus 19121 • NL-1000 GC Amsterdam

Nederlandse Organisatie voor Wetenschappelijk Onderzoek
Netherlands Organisation for Scientific Research
Laan van Nieuw Oost Indië 131 •
Postbus 93138 •
NL-2509 AC Den Haag

Norway

Det Norske Videnskaps-akademi
Norwegian Academy of Science and Letters
Drammensveien 78 • N-0271 Oslo

Norges Forskningsråd
The Research Council of Norway
Stensberggata 26 • P.O. Box 2700 •
St Hanshaugen • N-0131 Oslo

Poland

Polska Akademia Nauk
Polish Academy of Sciences
Palac Kultury i Nauki •
PL-00-901 Warsaw

Portugal

Academia das Ciências de Lisboa
Lisbon Academy of Sciences
Rua da Academia das Ciências, 19 •
P-1200 Lisboa

Fundaçao para a Ciência e a Tecnológica
Foundation for Science and Technology
Avenida Dom Carlos I, 126 •
P-1200 Lisboa

Instituto de Cooperação Científica e Tecnológica Internacional
Institute for International Scientific and Technological Cooperation
Avenida Dom Carlos I, 126 •
P-1200 Lisboa

Slovenia

Slovenska Akademija Znanosti in Umetnosti
Slovenian Academy of Sciences and Arts
Novi trg. 3 • SLO-1000 Ljubljana

Slovenska Znanstvena Fundacija
Slovenian Science Foundation
Stefanova Ul. 15 • SLO-1000 Ljubljana

Spain

Consejo Superior de Investigaciones Cientificas
Council for Scientific Research
Calle Serrano 117 • E-28006 Madrid

Comisión Interministerial de Ciencia y Tecnología – Oficina de Ciencia y Tecnología
Interministerial Commission for Science and Technology
c/ Rosario Pino, 14-16 pl. 18a •
E-28020 Madrid

Sweden

Forskningsrådsnämnden
Council for Planning and Coordination of Research
Box 7101 • Regeringsgatan 56 •
S-103 87 Stockholm

Humanistisk-Samhällsvetenskapliga Forskningsrådet
Humanities and Social Sciences Research Council
Box 7120 • Regeringsgatan 56 •
S-103 87 Stockholm

Kungliga Vetenskapsakademien
The Royal Academy of Sciences
Box 50005 • (Lilla Frescativägen 4a) •
S-104 05 Stockholm

Kungliga Vitterhets-, Historie-och Antikvitetsakademien
Royal Academy of Letters, History and Antiquities
Box 5622 • Villagatan 3 •
S-114 86 Stockholm

Medicinska Forskningsrådet
Medical Research Council
Box 7151 • Regeringsgatan 56 •
S-103 88 Stockholm

Naturvetenskapliga Forskningsrådet
Natural Science Research Council
Box 7142 • Regeringsgatan 56 •
S-103 87 Stockholm

Skogs- och Jordbrukets Forskningsråd
Swedish Council for Forestry and Agricultural Research
Box 6488 • Odengatan 61 •
S-113 82 Stockholm

Socialvetenskapliga Forskningsrådet
Swedish Council for Social Research
Box 2220 • Tullgränd 4 •
S-103 15 Stockholm

Teknikvetenskapliga Forskningsrådet
Research Council for Engineering Sciences
Box 7136 • Regeringsgatan 56 •
S-103 87 Stockholm

Switzerland

Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
Swiss National Science Foundation
Wildhainweg 20 • Postfach 2338 •
CH-3001 Bern

Konferenz der schweizerischen wissenschaftlichen Akademien
Conference of the Swiss Scientific Academies
Hirschengraben 11 • Postfach 2535 •
CH-3001 Bern

Turkey

Türkiye Bilimsel ve Teknik Araştırma Kurumu
The Scientific and Technical Research Council of Turkey
Atatürk Bulvari 221 • Kavaklidere •
TR-06100 Ankara

United Kingdom

Biotechnology and Biological Sciences Research Council
Polaris House • North Star Avenue •
UK-Swindon SN2 1UH

The British Academy
10 Carlton Terrace •
UK-London SW1Y 5AH

Economic and Social Research Council
Polaris House • North Star Avenue •
UK-Swindon SN2 1UJ

Engineering and Physical Sciences Research Council
Polaris House • North Star Avenue •
UK-Swindon SN2 1ET

Medical Research Council
20 Park Crescent •
UK-London W1N 4AL

Natural Environment Research Council
Polaris House • North Star Avenue •
UK-Swindon SN2 1EU

Particle Physics and Astronomy Research Council
Polaris House • North Star Avenue •
UK-Swindon SN2 1SZ

The Royal Society
6 Carlton House Terrace •
UK-London SW1Y 5AG

How the ESF works

The ESF's main decision-making forum is its General Assembly which brings together senior representatives of all of the Foundation's Member Organisations at an annual meeting in November in Strasbourg.

Implementation of the Assembly's decisions is overseen by the Foundation's Executive Council which meets three times a year. It approves the setting up of new activities, prepares the work of the next Assembly and ensures effective communication with Member Organisations and other relevant institutions. Along with the ESF President and Vice-Presidents, the Executive Council is made up of at least one elected member from each country with Member Organisations and from a balanced range of disciplines. Since 1994, it has been helped in its work by two ad hoc committees on Membership and Finance.

Ensuring continuity of ESF business between meetings of the Executive Council is the responsibility of the Board. It is constituted by the President, Vice-Presidents, up to five members elected from the Executive Council, and the Secretary General.

In addition, the ESF's ability to run a wide range of activities from organising exploratory workshops to providing science policy advice is crucially dependent on the contribution of its various committees and boards.

Its five Standing Committees (medical sciences, life and environmental sciences, physical and engineering sciences, humanities and social sciences) are made up of leading scientists and representatives from the Foundation's Member Organisations and are responsible for identifying scientific priorities, formulating strategies, developing research agendas and recommending new scientific programmes to be launched.

The Foundation's networks and European research conferences are overseen by separate committees reporting to the Executive Council and a number of other committees and boards have been set up in scientific areas requiring specific attention.

The management and administration of the Foundation's business, including both its scientific and science policy activities, is taken care of by the ESF office, directed by the Secretary General, based in Strasbourg.

Assembly, Executive Council and Board meetings 1998

JANUARY
- 22 23 Board
- 23 Board + Standing Committee Chairmen

FEBRUARY

MARCH
- 19 20 Board

APRIL

MAY
- 28 Board
- 28 29 Executive Council

JUNE
- 9 10 Board
- 10 Board + Standing Committee Chairmen

JULY

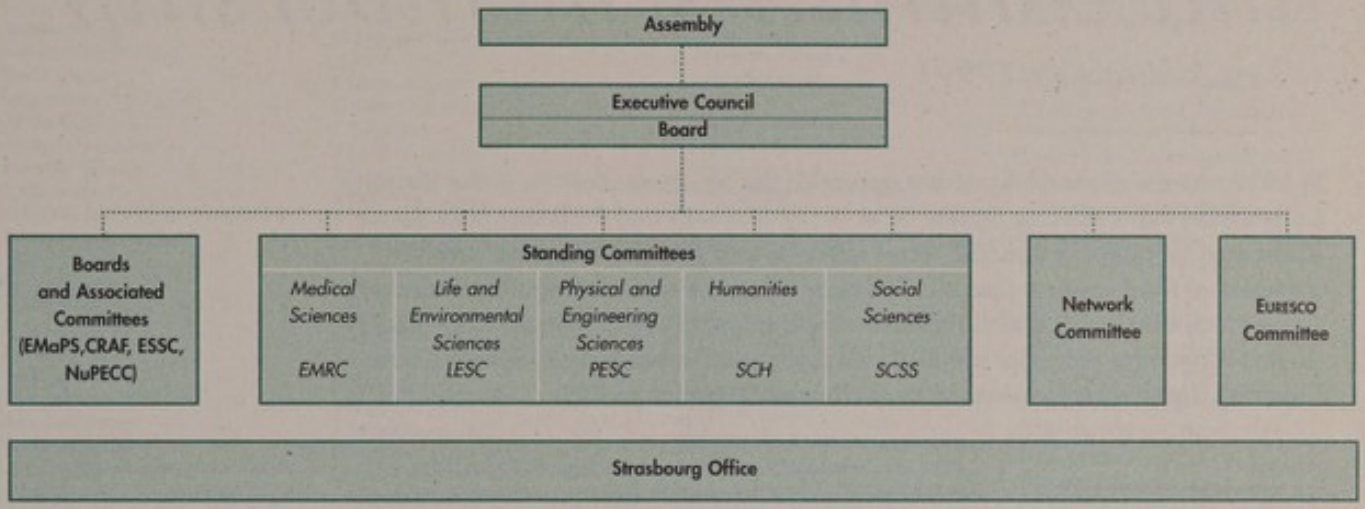
AUGUST
- 3 Board
- 24 Board
- 24 25 Executive Council

SEPTEMBER

OCTOBER

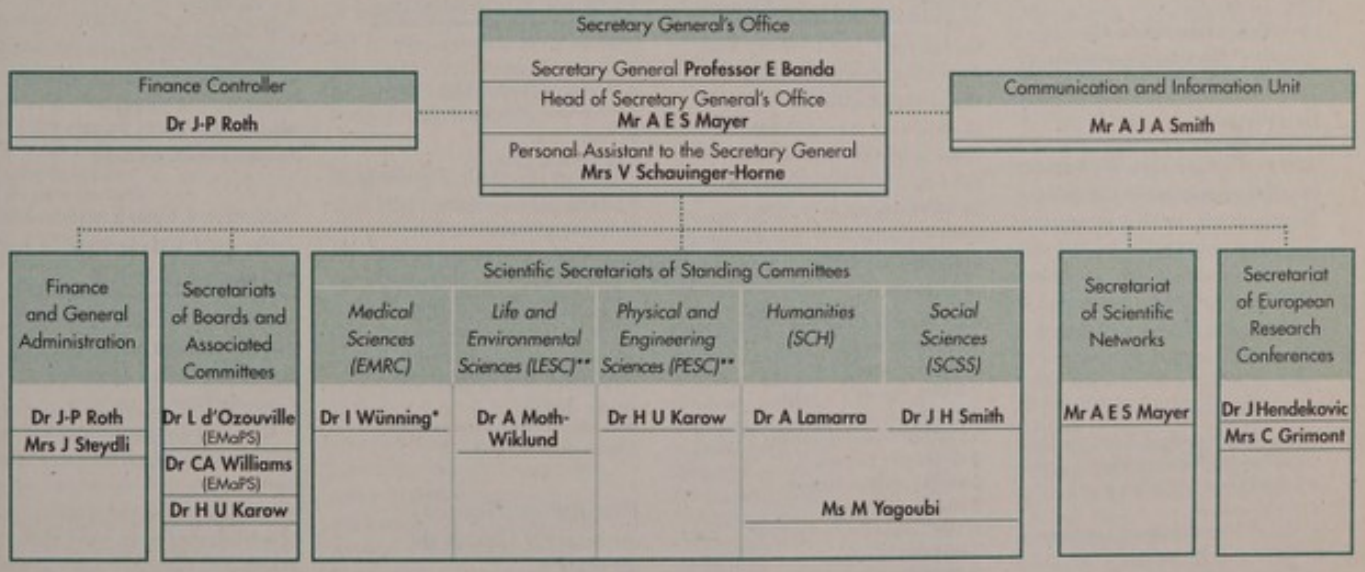
NOVEMBER
- 25 Board
- 25 26 Executive Council
- 26 27 Assembly

ESF structure



Structure of the ESF office

(senior staff in post as at 1 January 1999)



*Dr M Minkowski from 1 May 1999
**Dr S Mehlert (LESC, PESC) from 1 April 1999

Consultants
Dr M Sparreboom (Asian Studies)
Dr D Evered (Bioethics)

ESF board, executive council and committee membership

(as at 1 January 1999)

In 1998, the ESF General Assembly approved the recommendations of the Electoral Commission that Professor Gustav Björkstrand (Finland) and Professor Max Kaase (Germany) be appointed as ESF Vice-Presidents and that the following become members of the Executive Council: Professor Lazslo Keviczky (Hungary), Professor Cesar Nombela Cano (Spain), Professor Paola Ramat (Italy), Professor Chris Rapley (United Kingdom), Professor Ion Siotis (Greece) and Professor Josef Syka (Czech Republic). These appointments all took effect on 1 January 1999.

Board

Constituted by the President, the Vice-Presidents, up to five members elected from the Executive Council, and the Secretary General, the Board ensures the continuity of ESF business between meetings of the Executive Council and develops the Foundation's scientific policy.

Sir Dai Rees (President) *United Kingdom*
G Björkstrand (Vice-President) *Finland*
R J van Duinen (Vice-President) *The Netherlands*
M Kaase (Vice-President) *Germany*
D Cadet *France*
G Öquist *Sweden*
E Banda (Secretary General)
Secretary: **V M Schauinger-Horne**

Executive Council

With at least one elected member from each country with Member Organisations, the Executive Council is responsible for the management of the ESF, approves the setting up of new activities, and prepares the work of the Assembly. It is supported in its work by two committees on membership and finance.

Sir Dai Rees (President) *United Kingdom*
G Björkstrand (Vice-President) *Finland*
R J van Duinen (Vice-President) *The Netherlands*
M Kaase (Vice-President) *Germany*
D Cadet *France*
G Öquist *Sweden*
P Bosi *Italy*
S Guðbjarnason *Iceland*
H P Hertig *Switzerland*
V Kaucic *Slovenia*
D Kavlie *Norway*
L Keviczky *Hungary*
J Komender *Poland*
D N MacCormick *United Kingdom*
J Martinussen *Denmark*
C Nombela Cano *Spain*
N K Pak *Turkey*
P Ramat *Italy*
C Rapley *United Kingdom*
H Rauch *Austria*
E Sagarra *Ireland*
I Siotis *Greece*
J Syka *Czech Republic*
A Syrota *France*
A Trigo de Abreu *Portugal*
F E Verbeure *Belgium*
H Walther *Germany*
A Mitsos *Representative of the EC*
E Banda (Secretary General)
Secretary: **V M Schauinger-Horne**

Electoral Commission (1998)

Composed of one member from each country with Member Organisations, the Electoral Commission is responsible for making nominations for the election of the President and Vice-Presidents as well as for each vacant seat on the Executive Council and any other elected Committee.

K L Komarek (Chairman) *Austria*
G Chiarotti *Italy*
C Chirol *France*
F R Dias Agudo *Portugal*
A Eggimann *Switzerland*
P Fletcher *United Kingdom*
R Grunwald *Germany*
S Guðbjarnason *Iceland*
B Halász *Hungary*
A Hartkamp *The Netherlands*
J Hattula *Finland*
A Hejduk *Poland*
E Kobal *Slovenia*
B Öhngren *Sweden*
N K Pak *Turkey*
C Pascual *Spain*
T Sheedy *Ireland*
L Sigala *Greece*
M-J Simoen *Belgium*
I Terp *Denmark*
L Westgaard *Norway*
Secretary: **V M Schauinger-Horne**

Ad hoc Committee of the Executive Council on Membership

G Öquist (Chairman) *Sweden*
L Oro (Chairman to Dec 98) *Spain*
G Björkstrand *Finland (to Dec 98)*
D Cadet *France (to Dec 98)*
S J Cox *United Kingdom*
R Grunwald *Germany (to Dec 98)*
H-P Hertig *Switzerland*
M Kaase *Germany*
V Kaucic *Slovenia (to Dec 98)*
C Nombela Cano *Spain*
R J van Duinen *The Netherlands*
Secretary: **A E S Mayer**

Finance Committee

D Kavlie (Chairman) *Norway*
M Dodet *France*
A Eggimann *Switzerland*
C P Ferreira *Portugal*
M Fratta *Italy*
R Grunwald *Germany*
J Kornacki *Poland*
E Schenk *The Netherlands*
N Williams *United Kingdom*

ESF office
E Banda ESF Secretary General
J-P Roth ESF Finance Officer

Auditor for financial year 1998

J Kulonpalo *Finland*

European Medical Research Councils (EMRC)

Set up in 1971, the EMRC became a Standing Committee of the ESF in 1975. Its main objectives range from promoting interactions between the biomedical and clinical research communities to developing European scientific strategies and stimulating collaboration in emerging research areas.
This Committee consists of ad hoc representatives of those ESF Member Organisations which act as Research Councils concerned with medicine and health.

EMRC Executive Group

A Hofman (Chairman) *The Netherlands*
L Peltonen (Chair to April 98) *Finland*
C Griscelli *France*
C Kordon *France*
G Radda *United Kingdom*
F Rubia Vila *Spain*
J Seelig *Switzerland*
O Stendahl *Sweden*
E-L Winnacker *Germany*
ESF Scientific Secretary:
I Wünning *(to May 99)*
M Minkowski
ESF Contact: **B Schaller**
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Standing Committee for Life and Environmental Sciences (LESC)

One of two committees set up in 1995 to succeed the former European Science Research Councils (ESRC), LESC is responsible for a broad area of science including biology, agriculture, earth sciences, glaciology and oceanography. It is supported in its work by a number of other ESF committees and boards (see EERO sub-committee, Marine and Polar Boards, and ESSC)

L Walløe (Chairman) *Norway*
W Rathmayer (Chairman to Dec 98) *Germany*
J Amesz *The Netherlands*
E Augstein *Germany (to Dec 98)*
J Balandreau *France*
K Bremer *Sweden (to beg 98)*

G Busuoli *Italy (to beg 98)*
T H Clutton-Brock *United Kingdom*
M Clynes *Ireland (to beg 98)*
A Coomans *Belgium*
V de Lorenzo *Spain*
D Donnelly *Ireland*
R Dyer *United Kingdom*
T Fagerström *Sweden*
E Fereres *Spain (to May 98)*
G Glatzel *Austria*
F Gubensek *Slovenia*
J Jouzel *France*
J A Korstgård *Denmark*
D Lalas *Greece*
I Lang *Hungary (to beg 98)*
A Lindroth *Sweden*
A Matter *Switzerland*
J Meincke *Germany*
J-C Mounolou *France (to May 98)*
J W M Osse *The Netherlands (to May 98)*
B Říhová *Czech Republic*
A M Rosina *Italy*
I Sa-Correia *Portugal*
O Savolainen *Finland (to May 98)*
F A Seifert *Germany*
R Sirevåg *Norway*
V Taglietti *Italy*
H Thorgeirsson *Iceland*
A Urbanek *Poland*
T Vartiainen *Finland*
G Vida *Hungary*
D Weis *Belgium*
W B Wilkinson *United Kingdom*
D Cadet *ESF Executive Council*
J G Kuenen *EERO Committee*

ESF Scientific Secretary:
A Moth-Wiklund

ESF Contact: P Rowe
Tel: +33 (0)3 88 76 71 29
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EERO Committee

Supported by an association of 170 leading environmental scientists, the EERO Committee's main aim is to enhance the scientific knowledge needed to alleviate pollution caused by toxic chemicals and radionuclides.

J G Kuenen (Chair) *The Netherlands*
W Harder (Vice-Chair) *The Netherlands*
J-C Block *France*
P Brimblecombe *United Kingdom*
B Cosovic *Croatia*
V de Lorenzo *Spain*
H Grassl *Switzerland*
J-M Martin *Italy*
J L Ramos *Spain*
B Schink *Germany*
W Verstraete *Belgium*
L Vittozzi *Italy*
B Witholt *Switzerland*

ESF Scientific Secretary: A Moth-Wiklund

ESF Contact: P Rowe
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Standing Committee for Physical and Engineering Sciences (PESC)

Set up alongside LESC in 1995, PESC covers the six disciplines and borderline fields of chemistry, mathematics, physics, fundamental engineering sciences and technologies research. It maintains close links and monitors the activities of three ESF Associated Committees concerned with radio astronomy, space science and nuclear physics (see CRAF, ESSC, and NuPECC)

J Rojo (Chairman) *Spain*
J E Fenstad (Chairman to Dec 98) *Norway*
M Antonopoulos-Domis *Greece (from Jan 99)*
E Biemont *Belgium*
G Bonn *Austria*
C Bucci *Italy*
J P Conde *Portugal*
P Day *United Kingdom*
R Dekeyser *Belgium*
D M X Donnelly *Ireland*
M S Espedal *Norway*
H-J Freund *Germany*
H P Gislason *Iceland*
C Guet *France*
I Halliday *United Kingdom*
V Kaucic *Slovenia*
N Kroó *Hungary*
J M Langer *Poland*
E Larsen *Denmark*
P Martinoli *Switzerland*
M Mattila *Finland*
J Mlynek *Germany*
C Natoli *Italy*
P Omling *Sweden*
V M Orera *Spain*
H N Özgüven *Turkey*
H Rauch *ESF Executive Council representative*
M Rinaldi *Italy*
F W Sluijter *The Netherlands*
J-E Sundgren *Sweden (to Dec 98)*
P Swinnerton-Dyer *United Kingdom*
H Wennerström *Sweden*
G Wild *France*
P Zuna *Czech Republic*

Observer
J Ziv *Israel (to Dec 98)*
Z Tadmor *Israel*
M Malacarne *CEC*

ESF Scientific Secretary: H U Karow

ESF Contact: M Clifford
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Standing Committee for the Humanities (SCH)

The humanities encompass a broad spectrum of disciplines all pertaining to human consciousness, perception and interpretation of the world, and communication. The SCH plays a unique role in Europe in spearheading and exploring new approaches and problem areas, and in coordinating research in the humanities at a European level on a multilateral basis.

W Shea (Chairman) *France*
W Blockmans (Chairman to Dec 98) *The Netherlands*
D E D Beales *United Kingdom*
M Blay *France (to Dec 98)*
M Böhler *Switzerland*
M Csáky *Austria*
L Droulia *Greece (to Oct 98)*
E Fischer-Lichte *Germany*
K Gantar *Slovenia*
R Halleux *Belgium*
B Hansson *Sweden*
M Hatzopoulos *Greece*
J Jarab *Czech Republic*
T Karlsen Seim *Norway*
F Kiefer *Hungary*
P López *Spain*
G Mirdal *Denmark*
A Nenola *Finland*
V Ólason *Iceland*
M H Rocha Pereira *Portugal (to Dec 98)*
S Pamuk *Turkey*
A Peyraube *France*
E Sagarra *Ireland*
R Simili *Italy*
L F Sousa Barreto *Portugal*
S Tabaczynski *Poland*
A Verhulst *Belgium*
H L Wesseling *The Netherlands*
S Zoppi *Italy (to Dec 98)*

Subject representatives
R Ilbert *Islamic Studies*
E König *Linguistics*

Observers
W Ferris *National Endowment for the Humanities*
S Shaked *Israel Academy of Sciences and Humanities*

ESF Scientific Secretary: A Lamarra

ESF Contact: N Rémion
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Email: humanities@esf.org

Standing Committee for the Social Sciences (SCSS)

The SCSS covers a wide 'scientific domain' of academic disciplines: economics; political science; sociology; psychology; geography; management and business studies; social anthropology; education and socio-legal studies. As well as promoting high quality social science research at a European level, the Committee plays an important institutional role in strengthening European social science research infrastructure.

R Erikson (Chairman) *Sweden*
R Amann *United Kingdom*
E Baltensperger *Switzerland*
J Bayer *Hungary*
R Bohinc *Slovenia*
J Ferreira de Almeida *Portugal*
H Gaus *Belgium*
P Gundelach *Denmark*
L Hordijk *The Netherlands*
M Illner *Czech Republic*
C Jönsson *Sweden*
M Laver *Ireland*
L Leontidou *Greece*
O Listhaug *Norway*
H Matis *Austria*
J R Montero *Spain*
A Mummendey *Germany*
H Niemi *Finland*
L Paganetto *Italy*
M R Sertel *Turkey*
J Szacki *Poland*
Th Thorlindsson *Iceland*
F Thys-Clement *Belgium*
R Topol *France*

Observers
B Bertenthal *National Science Foundation, USA*
O G Brim *Social Science Research Council, USA*
S N Eisenstadt *Israel Academy of Sciences and Humanities*
H P Hertig *ESF Executive Council*
D Jaeger *COST Technical Committee, Social Sciences*
E Mochmann *Adviser, Social Science Databases*

ESF Scientific Secretary: J H Smith

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European Research Conferences Committee

Responsible for overseeing the ESF's programme of EURESCO conferences, the EURESCO Committee maintains close links with the ESF's Standing Committees and includes, alongside independent academics, representatives of other European science organisations experienced in running academic conferences.

D Cadet (Chairman) *France*
J Amesz *The Netherlands*
F Gannon *Germany*
P Gundelach *Denmark*
T Karlsen Seim *Norway*
C Kordon *France*
L Mandolini *Italy*
R M Pick *France*
F W Sluijter *The Netherlands*
K von der Mark *Germany*

ESF Office:
Head of EURESCO Unit: J Hendekovic
Conference Manager: C Grimont
ESF Contact: V Allspach-Kiechel
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Email: euresco@esf.org

Network Committee

The Network Committee serves as an advisory body to the Executive Council. Made up of members of the Executive Council and the Chairmen of the scientific Standing Committees, it is responsible for overseeing the scheme, reviewing proposals and making recommendations for new networks.

G Björkstrand (Chairman) *Finland*
W Blockmans *The Netherlands (to Dec 98)*
P Bosi *Italy*
J E Fenstad *Norway (to Dec 98)*
R Erikson *Sweden*
A Hofman *The Netherlands*
V Kaucic *Slovenia*
W Rathmayer *Germany (to Dec 98)*
J M Rojo *Spain*
W R Shea *France*
A Trigo de Abreu *Portugal*
L Walløe *Norway*

Secretary: A E S Mayer

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Email: networks@esf.org

EMaPS boards and associated committee membership

European Boards for Marine and Polar Science (EMaPS-Boards)

EMaPS, established in 1995, is composed of two Boards, one for marine science and one for polar science. Its main objective is to be the European voice for, and to facilitate co-operation between, European research organisations involved in marine and polar science.

D Cadet
(Chairman Joint Boards Executive)
Centre National de la Recherche Scientifique

EMaPS-Marine Board Members and their Delegates

Centre National de la Recherche Scientifique
D Cadet (Chair) *France*
Statens Naturvidenskabelige Forskningsråd
K Richardson (Vice-Chair) *Denmark*
Norges Forskningsråd
U Lie (Vice-Chair) *Norway*
Consejo Superior de Investigaciones Cientificas and **Comisión Interministerial de Ciencia y Tecnología – Oficina de Ciencia y Tecnologia**
J Tintore (Vice-Chair) *Spain*
Fonds National de la Recherche Scientifique
M Frankignoulle *Belgium*
Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
M Vincx *Belgium*
Suomen Akatemia / Finlands Akademi
M Leppäranta *Finland*
Institut Français de Recherche pour l'Exploitation de la Mer
P David *France*
Deutsche Forschungsgemeinschaft
G Wefer *Germany*
National Centre for Marine Research
D Papanikolaou *Greece*
Rannsóknarráð Islands
O S Astthorsson *Iceland*
Marine Institute
P Heffernan *Ireland*
Ente per le Nuove Tecnologie, l'Energia e l'Ambiente
V Artale *Italy*
Consiglio Nazionale delle Ricerche
S Vallerga *Italy*
Nederlandse Organisatie voor Wetenschappelijk Onderzoek and **Koninklijke Nederlandse Akademie van Wetenschappen**
J W de Leeuw *The Netherlands*
Havforskningsinstituttet
R Vaage *Norway*
Polska Akademia Nauk
J Dera *Poland*
Instituto de Cooperação Cientifica e Tecnológica Internacional
M Ruivo *Portugal*
Comisión Interministerial de Ciencia y Tecnologia – Oficina de Ciencia y Tecnologia
E Lopez-Jamar *Spain*
Naturvetenskapliga forskningsrådet
L Rahm *Sweden*
Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
T Stocker *Switzerland*
TÜBITAK-The Scientific and Technical Research Council of Turkey
N Kemal Pak *Turkey*
NERC
R F C Mantoura *United Kingdom*
J Shepherd *United Kingdom*

Scientific Secretary:
L d'Ozouville

Contact: **J Swift**
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EMaPS-Polar Board Members and their Delegates

The Commission for Scientific Research in Greenland
J P Hart Hansen (Chair) deceased Sept 98 *Denmark*
Ente per le Nuove Tecnologie, l'Energia e l'Ambiente
M Zucchelli (Vice-Chair) to Sept 98 (Chair) from Sept-Dec 98 *Italy*
Norsk Polarinstitutt
O Orheim (Vice-Chair) *Norway*
Natural Environment Research Council
C Rapley (Vice-Chair) *United Kingdom*
Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
H Decleir *Belgium*
Fonds National de la Recherche Scientifique
R Souchez *Belgium*
Statens Naturvidenskabelige Forskningsråd and **Det Kongelige Danske Videnskabernes Selskab**
C Hammer *Denmark*
Suomen Akatemia / Finlands Akademi
P Mälkki *Finland*
Institut Français pour la Recherche et la Technologie Polaires
G Jugie *France*
Hermann von Helmoltz-Gemeinschaft Deutscher Forschungstentren
J Thiede *Germany*
Rannsóknarráð Islands
H Björnsson *Iceland*
Consiglio Nazionale delle Ricerche
R Azzolini *Italy*
Nederlandse Organisatie voor Wetenschappelijk Onderzoek and **Koninklijke Nederlandse Akademie van Wetenschappen**
R Schorno *The Netherlands*
Norges Forskningsråd
A Schytte Blix *Norway*
Polska Akademia Nauk
S Rakusa-Suszczewski *Poland*
Russian Academy of Sciences
V Pavlenko *Russian Federation*
Consejo Superior de Investigaciones Cientificas and **Comisión Interministerial de Ciencia y Tecnología – Oficina de Ciencia y Tecnologia**
J López *Spain*
Kungliga Vetenskapsakademien
D Hedberg *Sweden*
Polarforskningssekretariatet
to be nominated *Sweden*
Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
B Stauffer *Switzerland*

Scientific Secretary: **C A Williams**

Contact: **J Swift**
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Email: emaps@esf.org

Committee on Radio Astronomy Frequencies (CRAF)

CRAF, which was established in 1988, represents all the major radio astronomical observatories in Europe. Its mission is to coordinate activities to keep the frequency bands used by radio astronomers in Europe free from interference.

R J Cohen (Chairman) *United Kingdom*
T A Th Spoelstra (Secretary + Frequency Manager) *The Netherlands*
R Bachiller *Spain*
A O Benz *Switzerland*
E Bervalds *Latvia*
G F Block *France*
P Cugnon *Belgium*
B A Doubinski *Russia*
W van Driel *France*
J Engelberg *Finland*
I Fejes *Hungary*
E Fürst *Germany*
K Jiricka *Czech Republic*
D Morris *France*
M E Özel *Turkey*
J P V Poiares Baptista *The Netherlands*
K Ruf *Germany*
A A Sanches de Magalhaes *Portugal*
P Scott *United Kingdom*
G Tomassetti *Italy*
J B Usowicz *Poland*
G Wannberg *Sweden*
A Winnberg *Sweden*

Expert member:
J E B Ponsonby *United Kingdom*

ESF Scientific Secretary: **H U Karow**

ESF Contact: **M Clifford**
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European Space Science Committee (ESSC)

The European Space Science Committee, established within the ESF in 1975, covers space physical science, earth observation and microgravity. It acts as a spokesman at the European and international level on the issues

J L Culhane (Chairman) *United Kingdom*
W Alpers *Germany*
J A M Bleeker *The Netherlands*
A Cazenave *France*
M-L Chanin *France*
A M Cruise *United Kingdom*
J J Favier *France*
A Giménez *Spain*
R J Gurney *United Kingdom*
G Haerendel *Germany*
G Horneck *Germany*
J-C Legros *Belgium*
D Linnarsson *Sweden*
N Mandolesi *Italy*
P Masson *France*
H Sünkel *Austria*
G Vedrenne *France*
J C Zarnecki *United Kingdom*
A Zdziarski *Poland*

ESF Scientific Secretary: **H U Karow**
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Email: cwerner@esf.org
Executive Secretary: **J-C Worms**

The ESSC meetings are also attended by representatives from the European Space Agency, the European Commission, the Space Research Institute of the Russian Academy of Sciences, the Space Studies Board of the US National Academy of Sciences, and COSPAR.

Nuclear Physics European Collaboration Committee (NuPECC)

Established in 1990 as an Associated Committee of the ESF, NuPECC's task is to strengthen European collaboration in nuclear science through the promotion of nuclear physics and its trans-disciplinary use and application.

S Galès (Chairman) *France*
G E Körner (Secretary) *Germany*
J Äystö *Finland*
T Dossing *Denmark*
J Durell *United Kingdom*
A C Fonseca *Portugal*
D Guerreau *France*
M N Harakeh *The Netherlands*
M Huyse *Belgium*
J Jastrzebski *Poland*
H Leeb *Austria*
G Løvhøiden *Norway*
M Lozano *Spain*
J Martino *France*
G van Middelkoop *The Netherlands*
E Migneco *Italy*
G Ricco *Italy*
A Shotter *United Kingdom*
I Sick *Switzerland*
Ö Skeppstedt *Sweden*
H J Specht *Germany*
A Wagner *Germany*
T Walcher *Germany*
A Winther *Italy*

Observers
W von Oertzen *European Physical Society (EPS)*
E Fernandez *European Committee for Future Accelerators (ECFA)*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **M Clifford**
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Email: pesc@esf.org

Scientific programmes

**Often long term, ESF scientific programmes bring together substantive research projects carried out by multinational teams of scientists.
The following pages give details of the scientific programmes and their steering committees being supported by the ESF in 1998 and of the new programmes commissioned during the year.**

Medical sciences

Environment and Health (ENHE)* ** ***

1996-1999
20 contributing organisations

This interdisciplinary programme is part of a joint initiative with the EC and the World Health Organisation to draw up a coherent European R&TD plan to be presented to the 1999 London Intergovernmental Conference on Environment and Health. It is focusing on identifying research priorities in support of policy formulation and on improving the range of tools available for environmental health management.

J Huttunen (Chairman) *Finland*
R Kroes (Programme Coordinator) *The Netherlands*
H Autrup *Denmark*
P Beaune *France*
A Bernard *Belgium*
C Boia *Portugal*
C Braun-Fahrländer *Switzerland*
J M Calheiros *Portugal*
E Dybing *Norway*
G Elzinga *The Netherlands*
H Greim *Germany*
A Hofman *The Netherlands*
L-G Nilsson *Sweden*
A Pinter *Hungary*
O Preining *Austria*
M Pugh *Ireland*
J Siegrist *Germany*
Sir Colin Berry *United Kingdom*
G Thiers *Belgium*
L Walløe *Norway*
Observers
C Nolan *European Commission*
R Bertollini *WHO/ECEH*
M Krzyzanowski *WHO/ECEH*
ESF Scientific Secretary:
I Wünning *(to May 99)*
M Minkowski
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Immunogenetics of Allergy: towards prevention and care (IGA)

1997-1999
12 contributing organisations

Across Europe, the prevalence of atopic diseases and asthma is already high and is steadily increasing. This programme aims to identify the genes controlling atopy, to increase understanding of the cellular and molecular processes behind the body's immune response towards allergy, and to delineate the interplay between genotype and physiological and environmental factors.

D Charron (Chairman) *France*
B Bjorkstén *Sweden*
W Cookson *United Kingdom*
F Inacio *Portugal*
M L Kapsenberg *The Netherlands*
D Kraft *Austria*
C Lahoz *Spain*
J Lamb *United Kingdom*
H Lowenstein *Denmark*
E Maggi *Italy*
R Pauwels *Belgium*
G Peltre *France*
W J Pichler *Switzerland*
A Radbruch *Germany*
J-C Renauld *Belgium*
A Ranki *Finland*
A Ruffilli *Italy*
A Svejgaard *Denmark*
E Thorsby *Norway*
Observer
S Pollack *Israel*
ESF Scientific Secretary:
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M Minkowski
ESF Contact: **B Schaller**
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Email: bschaller@esf.org

Life and environmental sciences

Airborne Polar Experiment (APE)

1995-1999
4 contributing organisations

The programme concerns the coordination of an airborne experiment which is making use of a former spy plane as a stratospheric platform for *in situ* measurements of the minor atmospheric components, which are responsible for the greenhouse effect and the formation of ozone.

L Stefanutti (Chairman) *Italy*
G Amanatidis *European Commission*
R Azzolini *Italy*
G Braathen *Norway*
G Busca *Switzerland*
B Carli *Italy*
G Franceschetti *Italy*
R Jones *United Kingdom*
V Khattatov *Russia*
V Mitev *Switzerland*
T Peter *Germany*
L A Sokolov *Russia*
J Ström *Sweden*
G Visconti *Italy*
S Balestri (Assistant to Chairman) *Italy*
Observers
R Mackenzie *United Kingdom*
A Tuck *United States*
ESF Scientific Secretary: **C A Williams**
ESF Contact: **C Lobstein**
Tel: +33 (0)3 88 76 71 30
Email: clobstein@esf.org

Assessment of the Impacts of Genetically Modified Plants

1999-2003
12 contributing organisations

This programme aims at bringing together a high proportion of the research groups in Europe involved in risk assessment research who are specifically studying the genetics, ecology, pathology and agronomy of GM crop plants and their wild relatives. Its objective will be to provide substantial scientific data on GM plants, their near relatives, the transgenes, their interactions, and their impacts on agriculture and the environment in order to provide a sound scientific basis for risk assessment.

J Sweet (Chair) *United Kingdom*
K Ammann *Switzerland*
D Bartsch *Germany*
J C M Den Nijs *The Netherlands*
J Husby *Norway*
R Bagger Jørgensen *Denmark*
M S Pais *Portugal*
I Virgin *Sweden*
Alternate members
A Depicker *Belgium*
P Van Cutsem *Belgium*
P Dale *United Kingdom*
A Raybould *United Kingdom*
ESF Scientific Secretary:
A Moth-Wiklund
ESF Contact: **P Cosgrove**
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Email: pcosgrove@esf.org

Biophysics of Photosynthesis (PHOT)**

1993-1999
16 contributing organisations

The study of photosynthetic reaction centres is an excellent model system for electron transfer reactions, which are crucial to many biological processes, and benefit investigations in molecular biology and biochemistry.

A J Hoff (Chairman) *The Netherlands*
J Aghion *Belgium*
R J Cogdell *United Kingdom*
G Garab *Hungary*
J Korppi-Tommola *Finland*
S Malkin *Israel*

The number of "contributing organisations" refers to the number of organisations financially supporting a programme for all or part of its duration
* (also affiliated LESC) ** (also affiliated PESC) *** (also affiliated SCSS)

M E Michel-Beyerle *Germany*
M Miller *Denmark*
R Picorel *Spain*
S Styring *Sweden*
ESF Scientific Secretary:
A Moth-Wiklund
ESF Contact: P Cosgrove
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Email: pcosgrove@esf.org

Cyanobacterial Nitrogen Fixation (CYANOFIX)

1998-2002
8 contributing organisations

Through this programme, the expertise held by different European laboratories will be brought together to stimulate collaborative research in a number of areas related to cyanobacterial N_2 fixation. These areas include aspects of the physiology and molecular biology of N_2 fixation and protection against O_2 in heterocystous as well as non-heterocystous cyanobacteria, the development of genetic systems for some poorly investigated N_2-fixing cyanobacteria, investigations of some cyanobacterial-higher plant symbiosis as well as field studies of natural communities of N_2-fixing cyanobacteria.

B Bergman (Chair) *Sweden*
E Flores (Vice-Chair) *Spain*
H Böhme *Germany*
B Osborne *Ireland*
K Sivonen *Finland*
S Ventura *Italy*
A Wilmotte *Belgium*
ESF Scientific Secretary:
A Moth-Wiklund
ESF Contact: P Cosgrove
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Email: pcosgrove@esf.org

ESF Consortium for Ocean Drilling (ECOD)

1986-2003
12 contributing organisations

The Ocean Drilling Program (ODP) is an international partnership, led by the US National Science Foundation, of scientists and institutions studying the geological and tectonic history of ocean basins worldwide as well as our planet's palaeoenvironment. Through the ESF Consortium, scientists from Belgium, Denmark, Finland, Iceland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Turkey have made important contributions.

ESF Management Committee for the ODP (EMCO)
M von Knorring (Vice-Chairman) *Sweden*
S Egelund *Denmark (Chair to June 98)*
C Ehlers *Finland*
J Hertogen *Belgium (Vice-Chair to June 98)*
J Monteiro *Portugal*
G Palmason *Iceland*
T Pedersen *Norway*
A Perez-Estaun *Spain*
M L Ruscitto *Italy*
J Stel *The Netherlands*
J-B Weber *Switzerland*
Y Yilmaz *Turkey (to Oct 98)*

ESF Scientific Committee for the ODP (ESCO)
N Holm (Chairman) *Sweden*
M C Comas *Spain*
C Ehlers *Finland*
N Görür *Turkey (to Oct 98)*
J Kenter *The Netherlands*
J McKenzie *Switzerland (Chair to June 98)*
N Mikkelsen *Denmark*
J Monteiro *Portugal*
I Premoli Silva *Italy*
A Solheim *Norway*
A Sveinsbjornsdottir *Iceland*
D Weis *Belgium*
Science Coordinator:
M Ask *Sweden*
ESF Scientific Secretary:
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ESF Contact: J Dalton
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Email: jdalton@esf.org

European Ice Sheet Modelling Initiative (EISMINT)

1993-1997 (1)
10 contributing organisations

In the context of understanding the role of ice sheets in the global climate system, mathematical modelling is central to studies of ice-sheet behaviour. This programme came from work within the former joint ESF/EU European Committee for Ocean and Polar Sciences (ECOPS).

(1) Funding ended in 1997 but the programme will continue activities through to spring 1999.

C Doake (Chairman) *United Kingdom*
H Björnsson *Iceland*
H Blatter *Switzerland*
D Dahl-Jensen *Denmark*
D J Drewry *United Kingdom*
P Holmlund *Sweden*
P Huybrechts *Belgium*
C Ritz/A Letréguilly *France*
H Miller *Germany*
J Oerlemans *The Netherlands*
I Tabacco *Italy*
ESF Scientific Secretary:
C A Williams *(to April 99)*
S Mehlert
ESF Contact: P Rowe
Tel: +33 (0)3 88 76 71 29
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European Lake Drilling Project (ELDP)

1996-2000
8 contributing organisations

This programme is concentrating on compiling a calendar-year time scale of palaeoclimate change over the past 25,000 years. This will be based on a broad spectrum of multi-disciplinary lake data.

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European Project for Ice Coring in Antarctica (EPICA)

1996-2000
10 contributing organisations

Geographical location, ice thickness and climatology combine to make Antarctica the storehouse of the longest and most representative proxy data for the composition and temperature of ancient atmospheres. This project of complex logistics and scientific cooperation is the first 'Grand Challenge' identified by the former ESF/EU European Committee for Ocean and Polar Sciences (ECOPS).

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EUROPROBE

1992-2001
18 contributing organisations

Europrobe is working to increase our understanding of the tectonic evolution of the Earth's crust and mantle and the dynamic processes that led to its current state. Drawing on the expertise of more than 1,000 geoscientists from 24 European countries, the programme is studying a section of the lithosphere that straddles western and eastern Europe, from the Atlantic to the Urals.

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Geodynamics and Ore Deposit Evolution (GEODE)

1998-2002
12 contributing organisations

This programme aims at building a quantitative understanding of the geological processes that result in world-class ore deposits. Research focuses on five mineral provinces: the massive sulphides of Iberia, Pancardi, the Baltic Shield, the Urals and Palaeozoic sedimentary basins and contributes to the search for new

deposits and optimises the sustainable production of known deposits.

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Ground Water Pollution (GPoll)

1998-2001
11 contributing organisations

The programme is focused on initiating and promoting multinational, multidisciplinary research on pollution of groundwater by toxic chemicals, radionuclides and by excess nutrients. It focuses on pollution in groundwater systems because of their significance for human and environmental health. The emphasis is on basic and strategic research that has potential for use in maintaining clean water supplies.

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Linking Community and Ecosystem Ecology

1999-2003
15 contributing organisations

Community ecology and ecosystem ecology provide two different perspectives on ecological systems, their structure, their functioning, their dynamics and their evolution. Unifying these perspectives is the aim of this programme and is an important challenge today both to progress our fundamental understanding of natural and managed ecosystems and to provide appropriate answers to more applied questions such as the impacts of biodiversity loss or species invasions on ecosystem sustainability.

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Plant Adaptation

1997-2001
15 contributing organisations

Adaptation to environmental conditions has been the key to success for plant species still existing today. Understanding how adaptation takes place is a major issue for both agriculture and forestry as well as for studies on environmental change. This programme aims to take advantage of recent advances in the fields of ecology, genetics, molecular biology and physiology to study issues ranging from climatic adaptation and the genetic basis of adaptation through to understanding and quantifying natural selection.

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Population Biology (POBI)

1994-1998
11 contributing organisations

This programme aims to stimulate synthesis, integration, and an evolutionary approach to ecology and genetics across national borders in Europe. It is focused on three central themes: genetic conflicts; population structure and life histories which share a unifying perspective of evolution.

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Quaternary Environment of the Eurasian North (QUEEN)

1996-2000
7 contributing organisations

The aim of this programme is to utilise the ongoing activities and projects operating in several sectors of the eastern Arctic regions and the many bilateral projects between Russian and western European research groups in order to study modern and past environmental changes in a structured and coordinated manner.

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A Elverhøi *(CAPE liaison)*
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Response of the Earth System to Impact Processes (IMPACT)

1998-2002
12 contributing organisations

Impacts of asteroids or comets on the earth surface have played an important role in the evolution of the planet. Building on a successful ESF network, this programme is focusing on 'the nature of impacts and their impact on nature' by studying the effects of impact events, both large and small, on the environment, including atmospheric, climatic, biologic, and geologic interactions and their relations.

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Theoretical Biology of Adaptation (TBA)

1998-2001
12 contributing organisations

In almost any biological research programme, even if it builds on seemingly simple ideas, important qualities of these ideas, such as consistency, productivity and testability are enhanced by an integrated use of mathematics. This programme will help, through a series of integrated workshops, complemented by exchange visits, to ensure that there is a generation of researchers that are not only competent theoreticians but who also have a broader knowledge of biology than has been seen before in Europe.

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Transport Processes in the Atmosphere and Oceans (TAO)

1996-1999
8 contributing organisations

This programme concerns the transport processes in the geophysical fluids, atmosphere and oceans, from a theoretical and numerical point of view. It is not only an exercise of difficult mathematics, but the results will be useful to applied scientists and decision makers in environmental policy.

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Tropical Canopy Research (TCR)

1994-1998
6 contributing organisations

In this programme are studied the patterns and processes that lead to and maintain the immense diversity of life in the tropics. The programme should provide a greater understanding of tropical forest ecosystem functioning and the significance of biodiversity in its structural and functional maintenance and regeneration.

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Physical and engineering sciences

Applied Mathematics for Industrial Flow Problems (AMIF)

1997-2001
15 contributing organisations

By applying pure mathematics and numerical analysis to the study of turbulence and other associated highly complex flow problems, this programme aims to provide research results of industrial relevance. Its goals are to improve the mathematical development of fluid flow modelling, the advancement of existing numerical solution methods, and to increase understanding of the strengths of new approaches in fluid dynamics, non-linear analysis, and numerical analysis.

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Artificial Biosensing Interfaces (ABI)

1994-1998
11 contributing organisations

This programme was developed through the former European Science Research Councils' Technical Sciences Committee, and links collaborating centres in the fields of characterisation of simple and complex substrates; substrate modification and coupling of biomolecules; matrix effects on biomolecule functions; transduction phenomena and biorecognition.

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Challenges in Molecular Simulations: bridging the length and time-scale gap (SIMU)

1999-2003
14 contributing organisations

Molecular simulation has the potential to play a central role in the design of new materials and processes, and in the modelling of biological processes. There is, however, one important bottleneck that limits the applicability of simulations: even if we allow for another thousand fold increase in computing power, there is a huge gap between the length scales and time scales that can be studied in simulation and those that are relevant for most industrial and biological processes. The aim of the programme is to pool the considerable European expertise in the different sub-disciplines in order to make progress in this outstanding problem in computational materials science.

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Control of Complex Systems (COSY)

1995-1999
16 contributing organisations

The COSY programme aims to promote a multidisciplinary activity which will enable basic theory to be furthered on control science and systems modelling and integration, thus bridging the gap between conceptual, analytical and experimental control engineering. In particular, it aims to study tools which are capable of analysing control systems with the increased complexity and hybrid nature resulting from compatible, consistent use of combined heuristic, quantitative and qualitative information, together with expert knowledge, in a supervised control system architecture.

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Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces (STRUC- ψ κ)

1998-2002
18 contributing organisations

This programme concerns an expanding field in mainstream physics, surface science and materials science, with new applications pushing into mineralogy, chemistry and even to calculations in biology. It aims at enabling the sharing of a broad range of techniques and new developments, and forging links between experimentalists in the growing range of applications.

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Experimental and Theoretical Investigation of Complex Polymer Structures (SUPERNET)

1999-2003
9 contributing organisations

This programme aims at combining the complementary expertise of leading European research groups in the experimental and theoretical study of polymer networks and block polymers to gain a deeper understanding of two fundamental questions: first the process of formation of complex topological structures such as dendrimers, branched polymers and multicomponent or interpenetrating polymer networks of varying topologies and second, correlation between the final materials' properties and the chemical structure of constituent monomers or polymers.

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Fermi-Liquid Instabilities in Correlated Metals (FERLIN)

1998-2002
8 contributing organisations

Metals are usually described within the framework of Fermi-liquid theory. Recently, striking deviations from Fermi-liquid behaviour have been found in several heavy-fermion systems. This programme aims at making a definite assignment of the non-Fermi liquid behaviour in a given system to a particular scenario and shed light on the microscopic origin, in particular on the type of excitations that are responsible for non-Fermi liquid behaviour at the critical point.

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Highly Structured Stochastic Systems (HSSS)

1997-2000
11 contributing organisations

Complex stochastic models have in recent years found applications in areas as diverse as expert systems, genetics, and statistical mechanics. This programme is bringing together researchers from the related areas of probability and statistics to tackle new challenges including developing diagnostic and analytic tools for model criticism; understanding sensitivity of models to local specifications; identifying limits of causal interpretation in networks representing observational studies; and extending the theory and methodology to systems that develop over time.

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Interaction of Superintense, Femtosecond Laser Fields with Atoms, Solids and Plasmas (FEMTO)

1999-2003
9 contributing organisations

The recent development of super-intense lasers, capable of delivering femtosecond pulses of intensity up to 10^{19} W cm^{-2}, has led to the discovery of new phenomena in laser interactions with matter. The programme combines the efforts of leading groups from 12 European countries to carry out experimental and theoretical studies of these processes.

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Molecular Magnets (MM)

1998-2002
11 contributing organisations

This transdisciplinary programme is focusing on the synthesis and on the study of multifunctional properties of molecular magnets towards molecular electronics. It aims to develop a rational synthesis of new molecular magnetic systems. In particular, it hopes to increase understanding of the electronic structures of the molecular systems, related to their structures and to their physical properties, particularly spin density, spin localisation and delocalisation, electron-transfer, magnetic photo-excited states.

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Nanomagnetism and Growth Processes on Vicinal Surfaces (NANOMAG)

1998-2001
7 contributing organisations

This programme is bringing together leading specialists in fields including: growth of metallic self-organised nanostructures on vicinal surfaces, magnetic domain visualisation, X-ray magnetic diachroism, non-linear optics in ultrathin layers with controlled roughness, and theory of nanomagnetism. It aims to address fundamental problems so that R&D can meet the challenge of developing significantly improved high-density storage disks.

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Probabilistic Methods in Non-Hyperbolic Dynamics (PRODYN)

1998-2002
11 contributing organisations

Probabilistic and statistical methods are becoming increasingly important in understanding deterministic dynamical systems. This programme will help to unify European efforts directed at meeting the challenge of extending and generalising the techniques of hyperbolic dynamics to study non-hyperbolic systems.

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Quantum Information Theory and Quantum Computation (QIT)

1999-2003
9 contributing organisations

The new concept of quantum computing which has been developed over the past few years promises immense computational power and new insights into quantum mechanics and information theory. Quantum algorithms have been discovered that allow the solution of practically important problems which cannot be solved on any classical computer. The aim of the programme is to carry out theoretical and experimental studies in various applications of quantum computing as well as on fundamental concepts of the underlying quantum information theory.

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Statistical Physics of Glassy and Non-Equilibrium Systems (SPHINX)

1999-2003
10 contributing organisations

This programme focuses on the fundamental statistical physics of strongly interacting many-body systems with regard to the occurrence and properties of glassy and other complex macroscopic states and to non-equilibrium behaviour. It includes issues such as history-dependence (aging), self organisation, dynamical phase transitions, metastability, fluctuations, the effect of driving stimuli, disorder and stochasticity.

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Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures (SMARTON)

1998-2002
8 contributing organisations

Supramolecular chemistry has been described as the chemistry beyond the molecule, the study of chemical species held together by non-covalent intermolecular bonds. This programme aims at developing novel supramolecular systems, to understand the driving forces that allow two and three-dimensional organisation, to develop methods and tools to investigate, address, manipulate and change these structures, and finally to exploit their specific properties.

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Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)

1995-1999
10 contributing organisations

The NANO programme aims to promote, by bringing together researchers from the aerosol community and the materials science community, the synthesis of ceramic aerosols and films using gas phase techniques, with the aim of generating single-phase, or nanodispersed structural ceramic materials and electroceramics with new or improved properties.

H Fissan (Co-Chair) *Germany*
J Schoonman (Co-Chair) *The Netherlands*
J Carlsson *Sweden*
I Colbeck *United Kingdom*
H Gleiter *Germany*
M Grätzel *Switzerland*
E I Kauppinen *Finland*
H Livbjerg *Denmark*
J Pielaszek *Poland*
L Segers *Belgium*
D Vollath *Germany*
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J C Joubert *France*
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Vortex Matter in Superconductors at Extreme Scales and Conditions (VORTEX)

1999-2003
13 contributing organisations

The programme aims to investigate the interaction of the vortex matter in superconductors with nano-engineered artificial pinning centres of different sizes and topologies (point defects, correlated linear defects, regular pinning arrays of antidots and magnetic dots, etc.). Extreme length scales and conditions will be used to study systematically and to optimise the vortex confinement, thus increasing the superconducting critical parameters up to their theoretical limits.

V V Moshchalkov (Chairman) *Belgium*
P H Kes (Vice-Chairman) *The Netherlands*
E H Brandt (Vice-Chairman) *Germany*
A Barone *Italy*
Y Bruynseraede *Belgium*
O Fischer *Switzerland*
K Fossheim *Norway*
S Lewandowski *Poland*
B Pannetier *France*
N F Pedersen *Denmark*
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Humanities

Asian Studies ***

1995-2001
13 contributing organisations

The Asian Studies programme was started as a joint initiative of the Standing Committees for the Humanities and the Social Sciences. Its aim is to develop interdisciplinary collaborative projects in the broad field of Asian Studies, with an emphasis on the study of contemporary Asia. Activities include the selection of postdoc-fellows, the organisation of international workshops joint-ventured with Asian counterparts, and a database of European researchers on Asia. The programme is run by the ESF Asia Committee.

Th Svensson (Chairman) *Denmark*
W A L Stokhof (Secretary) *The Netherlands*
K Antoni *Germany*
A Avanzini *Italy*
J Breman *The Netherlands*
J-C Domenach *Norway*
M Gaboriau *France*
C le Grand *Sweden*
T King *United Kingdom*
R Luostarinen *Finland*
W Marschall *Switzerland*
J Martinussen *Denmark*
R M Perez *Portugal*
N Standaert *Belgium*
E Steinkellner *Austria*
R G Wagner *Germany*
Observers
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C Kurokawa *The Toyota Foundation, Japan*
Association for Asian Studies *United States*
Chiang Ching-kuo *Foundation for International Scholarly Exchange, Taiwan*
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Cultural Exchange in Europe, c.1400 – c.1700

1999-2002
21 contributing organisations

Between the 15th and 17th centuries, the most important feature of European culture was that Europe's cultural flux ultimately produced remarkable similarities in spite of numerous conflicts. Although some aspects of European culture achieved hegemonic status, the interpretation of culture in Europe has not yet been adequately described as an area of both homogeneity and diversity. The aim of this programme is to permit comparison between various European regions (not necessarily states) in order to locate and study differences, but also resemblances, between geo-cultural areas.

R Muchembled (Chairman) *France*
E W Monter (Secretary) *United States*
P Burke *United Kingdom*
G Chittolini *Italy*
M Derwich *Poland*
J M Gonzalez-Garcia *Spain*
C Kroetzel *Finland*
M Marcussen *Denmark*
R E Mohrmann *Germany*
V Reinhardt *Switzerland*
H Soly *Belgium*

*** (also affiliated SCSS)

W Sauter *Sweden*
K Vocelka *Austria*
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Individual and Society in the Mediterranean Muslim World (ISMM)

1996-1999
16 contributing organisations

The objective of this European programme is to seek to define the relationship between the individual and society in such a way as to understand, for each period of Islamic history, the organisation of interdependent relationships, the position attributed to the individual, and the creation of a hierarchy of the values which rule society.

R Ilbert (Chairman) *France*
A Avanzini *Italy*
C J Bürgel *Switzerland*
M H Chérif *Tunisia*
F Dassetto *Belgium*
J H R Davis *United Kingdom*
L T Fawaz *United States*
U Haarmann *Germany*
J Hjärpe *Sweden*
R Kruk *The Netherlands*
M Marin *Spain*
T Melasuo *Finland*
G Mirdal *Denmark*
E Toledano *Israel*
K S Vikor *Norway*
J Zdanowski *Poland*

Observers
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B Marino *Syria*

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Musical Life in Europe, 1600-1900: circulation, institutions, representation (MLE)

1998-2001
16 contributing organisations

During this 300 year period, the complexities of European music and its evolution mirrored many of the developments of European society, notably growing internationalisation. This programme will concentrate on the internationalisation of musical practices and tastes as well as resistance to this phenomenon including the rise of nationalism. Musical life in Europe will be considered as the whole of the processes of production, distribution, communication and the reception of musical works.

C H Mahling (Co-Chairman) *Germany*
C Meyer (Co-Chairman) *France*
E Wolf (Co-Chairman) *United States*
G Andersson *Sweden*
D Beales *United Kingdom*
L Bianconi *Italy*
D Garcia Fraile *Spain*
A Gerhard *Switzerland*
K Komlós *Hungary*
J H Koudal *Denmark*
J Ling *Sweden*
P Petrobelli *Italy*
M Vainio *Finland*
H Vanhulst *Belgium*

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Social sciences

Blueprint for a European Social Survey (ESS)

1997-1999
20 contributing organisations

A European Social Survey (ESS) holds the potential of becoming a major innovative step in achieving the necessary infrastructure for effective comparative analysis of European citizens' values and attitudes in the face of social, economic and political change. In preparing a blueprint for an ESS as a regular research instrument, this initiative will address also the important issue that such a survey could fulfil the equivalent need for the social scientist that the 'large research facility' does for the natural scientist

Steering Committee
M Kaase (Chairman) *Germany*
R Åberg *Sweden*
J Billiet *Belgium*
A Brandao Moniz *Portugal*
B Cautrès *France*
N Diamandouros *Greece*
H Domanski *Poland*
Y Esmer *Turkey*
P Farago *Switzerland*
S Kuhnle *Norway*
M Laver *Ireland*
G Martinotti *Italy*
K H Müller *Austria*
L Nordberg *Finland*
N Ploug *Denmark*
J Ramón Montero *Spain*
I Stoop *The Netherlands*
F Thys-Clément *Belgium*
N Tos *Slovenia*
M Warren *United Kingdom*
R Jowell *Chairman ESS Methodology Committee*

Methodology Committee
R Jowell (Chairman) *United Kingdom*
J Billiet *Belgium*
P Lynn *United Kingdom*
N Mayer *France*
E Mochmann *Germany*
J R Montero *Spain*
W Saris *The Netherlands*
A Schizzerotto *Italy*
J van Deth *Germany*
J Vogel *Sweden*
M Kaase *Chairman ESS Steering Committee*

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European Summer Research Institutes on Comparative Studies of Economic Organisations (ESRI)

1998-2001
14 contributing organisations

This programme of multidisciplinary summer research institutes is focusing on the interface between business culture, economic organisations and institutions. The institutes will combine workshops for experienced scholars with a research training summer school for young researchers.

P H Kristensen (Chairman) *Denmark*
K Lilja and T Taino *Finland*
M-L Djelic *France*
S Quack *Germany*
A Sorge *The Netherlands*
T Halvorsen *Norway*
F Louça *Portugal*
R Bohinc *Slovenia*
I Gutiérrez-Calderon *Spain*
H Glimstedt *Sweden*
G Kirchgässner *Switzerland*
R Whitley and G Morgan *United Kingdom*

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Exploratory Research Grant/Workshop Scheme in the Social Sciences

1998-1999
14 contributing organisations

The purpose of the grant scheme is to offer social scientists the facility of 'seed money' to both build and strengthen research contacts, to test innovative ideas and to develop potential research projects.

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Social Variations in Health Expectancy in Europe

1999-2002
Number of contributing organisations to be finalised

Reduction in inequalities in health is now a priority for several European governments. As expert groups advise politicians on the development of policy, it is recognised that although there has been substantial progress in the field of inequalities in health, the research base is still inadequate. The scale of the scientific problem is large: to sort through the complexities of causes of inequalities in health in order to determine where the chain of causation could potentially be broken. This programme aims at advancing scientific understanding that will be crucial to the development of evidence-based health policy.

Committee in course of formation
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Tackling Environmental Resource Management (TERM) – Phase 2

1998-2000
12 contributing organisations

TERM provides a forum where social science researchers involved in environmental studies at a national level can pool and share their expertise to tackle European-wide issues. The programme is also building up a comprehensive inventory of social science research in this field, enabling scientists to identify prospective partners and build on their current achievements.

B van der Knaap (Chairman) *The Netherlands*
A Correljé (Coordinator) *The Netherlands*
M Skou Andersen *Denmark*
M Järvelä *Finland*
H Spada *Germany*
S Kerekes *Hungary*
F Chiarello *Italy*
K H Alfsen *Norway*
J Subirats *Spain*
L J Lundqvist *Sweden*
H Gutscher *Switzerland*
J Skea *United Kingdom*
A Sors *EU observer*

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Scientific programmes at a glance

Medical sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Environment and Health (ENHE)	1996-1999	A, B, CH, D, DK, F, FIN, H, IRL, N, NL, P, S, UK	EMRC/LESC PESC/SCSS
Immunogenetics of Allergy: towards allergy and care (IGA)	1997-1999	A, B, CH, D, DK, FIN, IS, N, NL, P, S	EMRC

Life and environmental sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Airborne Polar Experiment (APE)	1995-1999	CH, D, I, S	LESC
Assessment of the Impacts of Genetically Modified Plants	1999-2003	B, CH, D, DK, I, N, NL, P, S, UK	LESC
Biophysics of Photosynthesis (PHOT)	1993-1999	B, D, DK, E, F, FIN, H, I, N, NL, S, UK	LESC/PESC
Cyanobacterial Nitrogen Fixation (CYANOFIX)	1998-2002	B, D, E, FIN, I, IRL, S	LESC
ESF Consortium for Ocean Drilling (ECOD)	1986-2003	B, CH, DK, E, FIN, I, IS, N, NL, P, S, TR	LESC
European Ice Sheet Modelling Initiative (EISMINT)	1993-1997	B, CH, D, DK, F, I, IS, NL, S, UK	LESC
European Lake Drilling Programme (ELDP)	1996-2000	B, CH, D, F, I, N, NL, PL, S	LESC
European Project of Ice Coring in Antarctica (EPICA)	1996-2000	B, CH, D, DK, F, I, N, NL, S, UK	LESC
EUROPROBE	1992-2001	A, B, CH, D, DK, E, F, FIN, H, I, IRL, N, NL, P, S, UK	LESC
Geodynamics and Ore Deposit Evolution (GEODE)	1998-2002	A, B, CH, DK, F, FIN, N, P, S, UK	LESC
Ground Water Pollution (GPoll)	1998-2001	B, D, E, FIN, NL, P, S, SLO, UK	LESC
Linking Community and Ecosystem Ecology	1999-2003	B, CH, D, DK, E, F, FIN, N, NL, P, PL, S, UK	LESC
Plant Adaptation	1997-2001	B, CH, D, DK, E, F, FIN, H, I, NL, P, S, UK	LESC
Population Biology (POBI)	1994-1998	B, CH, D, DK, F, FIN, NL, S, UK	LESC
Quaternary Environment of the Eurasian North (QUEEN)	1996-2000	CH, D, DK, FIN, N, S, UK	LESC
Response of the Earth System to Impact Processes (IMPACT)	1998-2002	A, B, CH, D, F, FIN, H, N, P, S, UK	LESC
Theoretical Biology of Adaptation (TBA)	1998-2001	A, B, D, DK, F, FIN, H, NL, S, UK	LESC
Transport Processes in the Atmosphere and Oceans (TAO)	1996-1999	CH, D, DK, F, I, P, S, UK	LESC
Tropical Canopy Research (TCR)	1994-1998	A, D, DK, I, NL, UK	LESC

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Scientific programmes at a glance

Physical and engineering sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Applied Mathematics for Industrial Flow Problems (AMIF)	1997-2001	B, CH, D, DK, F, FIN, I, N, NL, P, PL, S	PESC
Artificial Biosensing Interfaces (ABI)	1994-1998	B, CH, D, E, F, FIN, I, S	PESC
Challenges in Molecular Simulations: bridging the length and time-scale gap (SIMU)	1999-2003	B, D, CH, DK, E, F, FIN, I, N, NL, P, S, UK	PESC
Control of Complex Systems (COSY)	1995-1999	B, CH, D, DK, E, FIN, H, I, NL, P, PL, S, TR, UK	PESC
Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces (STRUC- ψ k)	1998-2002	A, B, CH, D, DK, E, F, FIN, H, I, IRL, P, PL, S, SLO, UK	PESC
Experimental and Theoretical Investigation of Complex Polymer Structures (SUPERNET)	1999-2003	B, D, DK, F, FIN, S, SLO, UK	PESC
Fermi-liquid Instabilities in Correlated Metals (FERLIN)	1998-2002	A, B, CH, D, F, SLO, UK	PESC
Highly Structured Stochastic Problems (HSSS)	1997-2000	B, CH, D, DK, FIN, I, N, NL, S, UK	PESC
Interaction of Superintense, Femtosecond Laser Fields with Atoms, Solids and Plasmas (FEMTO)	1999-2003	B, F, D, I, P, S	
Molecular Magnets (MM)	1998-2002	A, B, CH, D, DK, E, F, NL, SLO, UK	PESC
Nanomagnetism and Growth Processes on Vicinal Surfaces (NANOMAG)	1998-2001	B, CH, D, F, NL, PL, S	PESC
Probabilistic Methods in Non-Hyperbolic Dynamics (PRODYN)	1998-2002	B, CH, D, F, FIN, NL, P, PL, S, UK	PESC
Quantum Information Theory and Quantum Computation (QIT)	1999-2003	A, B, CH, D, DK, FIN, I, UK	PESC
Statistical Physics of Glassy and Non-Equilibrium Systems (SPHINX)	1999-2003	B, CH, D, DK, E, F, I, UK	PESC
Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures (SMARTON)	1998-2002	A, B, D, DK, F, NL, UK	PESC
Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)	1995-1999	B, CH, D, DK, FIN, NL, PL, S, UK	PESC
Vortex Matter in Superconductors at Extreme Scales and Conditions (VORTEX)	1999-2003	B, D, CH, DK, E, F, I, N, NL, P	PESC

Humanities

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Asian Studies	1995-2001	A, B, CH, D, DK, F, FIN, N, NL S, UK	SCH/SCSS
Cultural Exchange in Europe, c.1400-c.1700	1999-2002	A, B, CH, D, DK, E, GR, FIN, H, I, N, NL, P, PL, S, SLO, UK	SCH
Individual and Society in the Mediterranean Muslim World (ISMM)	1996-1999	A, B, CH, D, DK, E, F, FIN, I, N, NL, PL, S, TR, UK	SCH
Musical Life in Europe, 1600-1900: circulation, institutions, representation (MLE)	1998-2001	A, B, CH, D, DK, E, F, FIN, H, I, N, NL, S, UK	SCH

Social sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Blueprint for a European Social Survey (ESS)	1997-1999	A, B, CH, D, DK, E, F, FIN, I, IRL, N, NL, P, PL, S, TR, UK	SCSS
European Summer Research Institutes on Comparative Studies of Economic Organisations (ESRI)	1998-2001	B, CH, D, DK, E, FIN, I, N, NL, P, S, SLO, UK	SCSS
Exploratory Research Grant/Workshop Scheme in the Social Sciences	1998-1999	A, B, CH, DK, E, F, FIN, I, IRL, N, NL, P, S, UK	SCSS
Social Variations in Health Expectancy in Europe	1999-2002	number of contributing organisations to be finalised	SCSS/EMRC
Tackling Environmental Resource Management (TERM)			
Phase1	1995-1997	B, CH, D, DK, E, F, FIN, I, N, NL, S, UK	SCSS
Phase 2	1998-2000	CH, D, DK, E, FIN, H, I, N, NL, S, UK	SCSS

* Transdisciplinary programmes are listed here under the principal disciplinary area

Scientific networks

ESF networks bring together scientists to explore the potential of developing and carrying out research at a European level. Interdisciplinarity is encouraged. Usually relatively short term, networks may lead to proposals for research programmes. The following pages give details of the scientific networks and their coordination committees being supported by the ESF in 1998 and of the new networks commissioned during the year.

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Medical sciences

Development of Methods to Investigate the Interaction between Nutritional, Environmental and Genetic Factors in Early Human Development: demonstration project on orofacial clefts

1998-2001

Orofacial clefting is one of the commonest human birth defects occurring in about one in 700 babies. Recent evidence that appropriate nutrition and environmental conditions can reduce the incidence of orofacial clefting provides one avenue for future research. Equally important is the genetic side with the ongoing search for candidate genes. The network will provide a forum to identify the most fruitful research strategies in these areas and the interaction between the two.

S Aymé (Co-Chairman) *France*
P A Mossey (Co-Chairman) *United Kingdom*
A Arngrimsson *Iceland*
C Bonaiti-Pellie *France*
E Calzolari *Italy*
S Cordier *France*
A E Czeizel *Hungary*
D Fitzpatrick *United Kingdom*
J Little *United Kingdom*
A Queisser-Luft *Germany*
A Ritvanen *Finland*
J Scott *United Kingdom*
R Steegers-Theunissen *The Netherlands*
R T Lie *Norway*

Observers
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T Eskes *The Netherlands*

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Genetic Susceptibility to Environmental Toxicants – Impacts on Human Health

1998-2001

Environmental toxicants play an important role in the aetiology of many chronic diseases. However, there are considerable differences in individuals' susceptibility to such toxicants. Genetic polymorphisms in some of the biotransformation enzymes concerned have provided a partial explanation, but further research is needed to understand the biological consequences of those polymorphisms, the effects of which remain unknown. By bringing together laboratory-based scientists, clinicians and epidemiologists, the network aims to help better identify those groups at risk of the adverse effects of environmental toxicants.

A Autrup (Chairman) *Denmark*
T Bishop *United Kingdom*
H M Bolt *Germany*
A-L Borrese-Dale *Norway*
A Haugen *Norway*
K H Pursianen *Finland*
P Vineis *Italy*
R Wolf *United Kingdom*

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Multiple Primary Tumours in Oral Cancer: aetiology and clinical significance

1997-2000

Oral cancer is the sixth most common cancer. It is also a persistent disease, with approximately 60% of patients dying within five years of diagnosis, that appears to result from complex interactions between the environment and the human genome. The network aims to test the hypothesis that, in addition to problems in the epithelial cells that line the mouth, both inductive and carcinogen-induced alterations in stromal cell behaviour also occur during the process of field cancerisation.

S L Schor (Chairman) *United Kingdom*
B J M Braakhuis *The Netherlands*
E Dabelsteen *Denmark*
E L Lane *United Kingdom*
G Ogden *United Kingdom*
J Piffkò *Germany*
S Syrjänen *Finland*
L Zardi *Italy*

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Life and environmental sciences

Alpine Biodiversity (ALPNET)

1997-2000

The *Alpine Biodiversity* network involves the study of fauna and flora at three principal levels: at the genotype or molecular level; at the species level and then at the functional level. The network aims to build up a comprehensive picture of biodiversity on European mountains.

G Grabherr (Chairman) *Austria*
J Nagy (Co-ordinator) *United Kingdom (deceased Feb 98)*
L Nagy (Co-ordinator) *United Kingdom*
A Andonoski *Republic of Macedonia*
C Chemini *Italy*
V Galushin *Russia*
J I Holten *Norway*
J Jeník *Czech Republic*
F Klötzli *Switzerland*
C Körner *Switzerland*
J P Martinez Rica *Spain*
U Molau *Sweden*
D Thompson *United Kingdom*
R A Väisänen *Finland*

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Changing Land Use and its Impact on Biodiversity (CLIMB)

1998-2001

Agricultural exploitation of land is continuing to reduce plant biodiversity in many parts of Europe. However, in some areas attempts are being made to restore the original biodiversity by creating nature reserves. This network aims to improve our understanding of the mechanisms

by which biodiversity can be restored on land that has previously been heavily cultivated or abandoned. It will also investigate how biodiversity is maintained within unchanged semi-natural landscapes.

P Poschlod (Chairman) *Germany*
J P Bakker (Secretary) *The Netherlands*
S Dabbert *Germany*
R van Diggelen *The Netherlands*
A Grootjans *The Netherlands*
T Herben *Czech Republic*
H Olff *The Netherlands*
B Peco *Spain*
F J Sijtsma *The Netherlands*
J R B Tallowin *United Kingdom*
K Thompson *United Kingdom*
B D Wheeler *United Kingdom*
M Zobel *Estonia*

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Exploring the Deep Sub-seafloor Biosphere

1998-2001

The discovery of deep sub-surface microbial populations has changed scientists' perception of life on earth, which had previously been considered to be restricted to a thin surface veneer. The presence of bacteria in this extreme environment may prove to have important future applications, as a possible source of clean fuel and as a unique source of bacteria for biotechnology. The ESF network will consolidate and build on Europe's lead in this area by encouraging inter- and multi-disciplinary research in both the public and commercial sectors.

R J Parkes (Chairman) *United Kingdom*
A J Weightman (Secretary) *United Kingdom*
J Dietrich *France*
J Grimalt *Spain*
B B Jørgensen *Germany*
M Magot *France*
J A McKenzie *Switzerland*
J W Patching *Ireland*
K Pedersen *Sweden*
A C Skinner *United Kingdom*
K Stetter *Germany*
T Torsvik *Norway*

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Fossil Insects

1996-1999

The large number of fossil insects collected in Europe during recent years led to the establishment of this network, which aims to unite Europe's palaeoentomological community within a common research framework. The network intends to establish a database providing access via the Internet to information about collections, insect bearing localities and publications.

J-C Gall (Chairman) *France*
R Willmann (Vice-Chairman) *Germany*
E A Jarzembowski (Secretary) *United Kingdom*
O E Heie *Denmark*
J Koteja *Poland*
D M Martill *United Kingdom*
X Martinez-Delclòs *Spain*
A Nel *France*
V V Zherikhin *Russia*

Observer
B David *France*

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Hominoid Evolution and Environmental Change in the Neogene of Europe

1995-1998

This network focuses on the environmental changes that forced the evolution of the European hominids during the late Neogene period between 14 million and 5 million years ago. The great apes - i.e. chimpanzees, orang-utans, and gorillas - along with the hominids, evolved from their common ancestors during the late Neogene, yet until recently European studies and fossils had made relatively little contribution to worldwide knowledge of this period of hominoid evolution.

J Agusti (Chairman) *Spain*
M Fortelius (Secretary) *Finland*
P Andrews *United Kingdom*
L de Bonis *France*
J L Franzen *Germany*
L Kordos *Hungary*
L Rook *Italy*
N J Shackleton *United Kingdom*

Observer
D Pilbeam *United States*

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Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic (CLIMPACT)

1997-2000

The European Arctic is a particularly sensitive part of the global system. Through a series of three workshops, this network will bring together two important research communities – regional climate modellers and impact researchers. It aims to develop Europe's capacity to carry out regional integrated impact studies, combining both the natural and the socio-economic aspects of global change impacts on a regional level.

M Lange (Chairman) *Germany*
H Cattle *United Kingdom*
J H Christensen *Denmark*
W Cramer *Germany*
D Jacob *Germany*
E Koster *The Netherlands*
P Kuhry *Finland*
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D Slagstad *Norway*
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D Mcginnis *United States*
G Weller *United States*

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Physical and engineering sciences

Elementary Steps of Layer Growth in the Fabrication of Novel Materials by Atomic Layer Epitaxy (ALENET)

1998-2001

By fabricating solid materials by means of self-limiting chemical reactions (atomic layer epitaxy) scientists can exercise new levels of control in the synthesis of inorganic materials down to the nanometric level. The technique has opened up new possibilities to design materials with surface properties tailored to specific applications, in microelectronics and other fields. The network will bring together experts in gas phase reactions and in electrochemistry and liquid phase reactions and apply advanced characterisation techniques in order to optimise existing layered materials and to develop new ones.

U Bardi (Chairman) *Italy*
J-C Bertolini *France*
H H Brongersma *The Netherlands*
C Creemers *Belgium*
M L Foresti *Italy*
W Heiland *Germany*
G Friedbacher *Austria*
M Leskelä *Finland*
J Ross *Ireland*
T Suntola *Finland*
E Taglauer *Germany*
P van der Voot *Belgium*
R van Welzenis *The Netherlands*

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Field-responsive Polymers, Composite Organic Materials and Gels with Controlled Supramolecular Structure

1998-2001

The development of highly sensitive 'smart' polymer materials could lead to significant applications in the creation of new photochromic and thermochromic materials, memory devices and optical sensors amongst others. This network aims to foster collaboration in this new

interdisciplinary area of research. It will focus on the design of 'smart' polymer systems, the study and description of the dynamics of the molecular and supramolecular transformations, the investigation of thermodynamic parameters and transport phenomena and the study of ordering and relaxation effects under the action of external fields and change of external conditions.

K Schaumburg (Chairman) *Denmark*
E Chiellini *Italy*
N Hadjichristidis *Greece*
F Lafuma *France*
G Luckhurst *United Kingdom*
J Stumpe *Germany*
G ten Brinke *The Netherlands*

Expert guest members
A Khokhlov *Russia*
V Shibaev *Russia*

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Silk: properties and production

1998-2001

Silk was once an important commercial fibre because of its unique combination of strength, lightness and elasticity that is unmatched by any other natural product. During this century silk has been replaced by fabricated products which are usually inferior but cheaper, but recently the prospect has grown of silk regaining its earlier industrial importance. This time round, however, the silk will be manufactured, using modern biotechnological techniques. For this to be feasible we need to know more about the exact process by which natural silks, particularly spider silk, which is the strongest form, are made. The main purpose of this network is to analyse spider silk and its natural fabrication process.

F Vollrath (Chairman) *Denmark*
S O Andersen *Denmark*
D Edmonds *United Kingdom*
G Freddi *Italy*
D Knight *United Kingdom*
J Kovoor *France*
B Meier *The Netherlands*
G Wegner *Germany*

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Topological Defects

1997-2000

The *Topological Defects* network is concerned with non-equilibrium field theory in particle physics, condensed matter and cosmology. Topological defects occur in systems that have undergone a phase transition. They are small regions of space that have become trapped in the original phase, or the opposite phase from the rest of the system. The thrust of the network is to learn more about the equilibrium dynamics of the underlying quantum field theory by measuring topological defects that are detectable experimentally.

T W B Kibble (Chairman) *United Kingdom*
A Achucarro (Secretary) *Spain*
Y Bunkov *France*
R Durrer *Switzerland*
M Krusius *Finland*
A M J Schakel *Germany*
G Vitiello *Italy*

Observer
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Humanities

The Convergence and Divergence of Dialects in a Changing Europe

1995-1998

This network is bringing together linguists throughout Europe to study how social, cultural and political changes are affecting traditional dialects in two specific ways: in some cases dialects are converging towards each other or towards the standard language of a nation, but in other cases there is divergence. The aim is to take a rigorous, scholarly approach to the study of these two types of dialect change, to coordinate existing research in the different countries, and possibly spawn new international collaborations.

P Auer (Co-Chairman) *Germany*
F Hinskens (Co-Chairman) *The Netherlands*
W Dressler *Austria*
W Haas *Switzerland*
A M Hagen *The Netherlands*
J Kallen *Ireland*
P Kerswill *United Kingdom*
K Mattheier *Germany*
I L Pedersen *Denmark*
A Sobrero *Italy*
J Taeldeman *Belgium*
M Thelander *Sweden*
J A Villena Ponsoda *Spain*

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Early Modern Thought: reconsidering the borderline between the Middle Ages and Early Modern Times

1998-2001

The idea that the Renaissance marked a huge intellectual divide between the preceding medieval period and the following modern era has been challenged increasingly in recent years. Many European scholars now share the conviction that the traditional divisions within this period in the history of thought should be dissolved and the institutional structures supporting it reformed. The aim of the network is to replace the established paradigm with a more accurate model.

S Knuutila (Chairman) *Finland*
J Biard *France*
S Caroti *Italy*
S Ebbesen *Denmark*
L Nielsen *Denmark*
J Kraye *United Kingdom*
I Rosier-Catach *France*
R Saarinen *France*
H Thijssen *The Netherlands*

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European Theatre Iconography

1997-2000

The *European Theatre Iconography* network aims to correct a longstanding literary bias in European theatre history by exploring how the non-verbal language of images has permeated national boundaries in a similar way to music. To date theatre history has been dominated by a literary perspective focused on plays and playwrights. The important visual aspect of a theatrical performance has been almost completely ignored. By adopting an interdisciplinary approach and making use of the techniques of the art as well as the social historian, the network will map a novel history of the dissemination of European theatre.

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C Balme (Secretary) *Germany*
M I Aliverti *Italy*
G Brandstetter *Switzerland*
M de Rougemont *France*
R Erenstein *The Netherlands*
M A Katritzky *Germany*
L Senelick *United States*
B Stribolt *Sweden*
O Taplin *United Kingdom*
H Watanebe-O'Kelly *United Kingdom*

Observer
L Senelick *United States*

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Intersign: sign linguistics and data exchange

1997-2000

Sign languages are natural, full-fledged languages with a grammatical structure that is comparable to that of spoken languages. However, research into their structure in Europe is still a recent development. This network aims at developing standards and guidelines for the study of (European) sign languages at all levels of language description, including the way these languages are acquired.

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B Bergman *Sweden*
P Boyes Braem *Switzerland*

E Pizzuto *Italy*
R Schulmeister *Germany*
R Sutton-Spence *United Kingdom*
H C Van der Hulst *The Netherlands*
B Woll *United Kingdom*
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Republicanism: a shared European heritage

1995-1998

The network studies the republican tradition as an invaluable resource in both institutional and moral or cultural terms. In addition to its historical research the network is addressing the question of the relevance of republicanism for contemporary political debates in Europe. The exploration of the institutional means by which civil liberty can be rendered consistent with political authority, of how citizens may meaningfully participate in their own government and of how political communities safeguard their own identity has comprised the institutional agenda of republicanism since classical Greek and Roman times.

Q Skinner (Chairman) *United Kingdom*
M van Gelderen (Secretary) *United Kingdom*
H-E Bödecker *Germany*
I Comparato *Italy*
I Hampsher-Monk *United Kingdom*
C Larrère *France*
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Science and the Visual Image: 1500-1800

1996-1999

This network aims to develop a new understanding of the interplay between art and science by studying visual images and items used to demonstrate and publicise the great discoveries made in Europe during the golden age of science from 1500 to 1800. A major objective is to break down the rigid barriers that have been drawn between art and science, and show how each benefited from the other.

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A Aeschlimann *Switzerland*
S W G de Clercq *The Netherlands*
G Darmon *Germany*
T Frängsmyr *Sweden*
P Galluzzi *Italy*
R Halleux *Belgium*
M Kemp *United Kingdom*
J Renn *Germany*
W Tega *Italy*
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Social sciences

Citizens in Transformation Network (CITNET)

1998-2001

A core question for social science research lies in the identification of behaviour patterns and coping strategies of people faced with great social upheavals. This network will use nation-wide representative sample surveys to examine the mass responses to the dramatic disruptions in central and eastern Europe that began with the collapse of the communist system. The primary data sources have already been collected together into the New Democracies Barometer and the New Baltic Barometer covering 15 central and east European countries. ESF support will finance a series of workshops at which researchers will exchange results of their analyses of the common database.

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M F Föster *Luxemburg*
R Habich *Germany*
C Haerpfer *Austria*
J Ramon Montero *Spain*
K H Müller *Austria*
W Seifert *Germany*
G Toka *Hungary*
J Vecernik *Czech Republic*
C Wallace *United Kingdom*
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Demographic and Labour Force Participation Trends in Europe and their Implications for Social Protection Expenditure

1998-2001

Over the last 20 years, expenditure on social protection programmes has been one of the fastest growing components of GDP in most European countries. Ageing populations, falling male labour force participation rates and rising levels of youth unemployment have now raised serious concerns over the long term sustainability of such programmes. The network will promote comparative research on the patterns of social protection expenditure across Europe and their relationship to demographic and labour market trends.

F Peracchi (Chairman) *Italy*
D Blanchet *France*
R Blundell *United Kingdom*
M Boldrin *Spain*
A Börsch-Supan *Germany*
R Disney *United Kingdom*
M Ferrera *Italy*
S Imrohoroglu *United States*
T Jappelli *Italy*
A Kapteyn *The Netherlands*
L Paramio *Spain*
M Persson *Sweden*
P Pestieau *Belgium*
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European Trade Study Group (ETSG)

1998-2001

Research in the area of international trade has advanced rapidly in recent years. Notable advances have been made in the theory of the location of industry, the modern theory of international development, economic takeoffs and agglomeration, and the theory of multinational enterprises. However, much of this research is concentrated at a geographically limited number of well-funded institutions. This network aims to link these core research centres with economists operating in smaller more peripheral institutions.

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I Wooton (Co-Chairman) *United Kingdom*
R Baldwin *Switzerland*
R Falvey *United Kingdom*
J Haaland *Norway*
H Horn *Sweden*
M Landesmann *Austria*
P Messerlin *France*
J P Neary *Ireland*
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Household and Community Dynamics: an Eurasian approach of mobility in the past societies

1997-2000

Population registers provide a valuable resource for researchers to study how individuals, families, and societies reacted under pressure when crises challenged their traditions or their cultural rules. By analysing 17th to 19th century registers from a variety of countries including Sweden, the Netherlands, Belgium, China and Japan, this network is the first systematic attempt to compare the ways in which different family systems responded to economic stress.

M Oris (Chairman) *Belgium*
T Bengtsson *Sweden*
M Breschi *Italy*
R Derosas *Italy*
A Hayami *Japan*
J Lee *United States*
F van Poppel *The Netherlands*
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Human Reasoning and Decision Making

1997-2000

This network is concerned with combining the perspectives of social and cognitive scientists to improve our understanding of how we make decisions. Increasingly, expert opinion is shifting away from the notion that decision makers evaluate options in a rigid rational way by weighing up benefits and probabilities, towards the idea that more flexible strategies are often involved, such as creating new alternatives that may be safer, or in some cases more risky but with greater prospects of success. The network aims to stimulate the development of common research programmes among cognitive scientists, economists, sociologists and philosophers of science.

J-P Caverni (Co-chair) *France*
R Viale (Co-chair) *Italy*
S Rizzello (Secretary) *Italy*
M Egidi *Italy*
J Evans *United Kingdom*
G M Hodgson *United Kingdom*
M Jones *United Kingdom*
P Legrenzi *Italy*
J van der Pligt *The Netherlands*
F van Winden *The Netherlands*
M Willinger *France*

Observers
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Innovative Practices and Emerging Concepts for Sustainable Urban Management in Developing Countries: a European contribution

1998-2001

Most developing countries have experienced rapid urbanisation during the second half of the 20th century. This phenomenon has been studied widely in Europe, but the resulting expertise has not so far been exploited effectively in helping developing countries manage their urban projects better. This network aims to consolidate research results and disseminate the results while also strengthening ties with relevant groups in developing countries.

A Durand-Lasserve (Chairman) *France*
M Balbo *Italy*
M Bassand *Switzerland*
A Gilbert *United Kingdom*
M Gosse *Belgium*
P Herrle *Germany*
A Larsson *Sweden*
P Nientied *The Netherlands*
J Oesterich *Germany*
T Paquot *France*
J-F Tribillon *France*
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Political-Economic Dimensions of Enlargement and New Membership of the European Union

1996-1998

This network aims to answer basic questions such as the extent to which enlargement of the European Union will affect European integration, and how some of the disadvantages of admitting new members can be overcome by changing European Union institutions. This is being accomplished by developing new theories of institutional change, and at the same time enhancing understanding of the extent to which the entry of new countries induces such change.

B Steunenberg (Chairman) *The Netherlands*
J Bacaria *Spain*
S Berg *Sweden*
D da Empoli *Italy*
P Dunleavy *United Kingdom*
B R Frey *Switzerland*
P Fudulu *Romania*
R Holly *Poland*
A Inotai *Hungary*
J-E Lane *Switzerland*
D Schmidtchen *Germany*
G Schneider *Germany*
F Schneider *Austria*
P Stanovnik *Slovenia*
F Turnovec *Czech Republic*
H Weck-Hannemann *Austria*
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Social Transformations in Central and Eastern Europe

1994-1998

The rapid and historically unique social transformations currently underway in eastern Europe are already the subjects of much research. This network has created a structure in which questions, theories, methods of observation, and results can be confronted and compared. A particular aim is to foster close collaboration between researchers in western and eastern Europe.

W Adamski (Co-Chairman) *Poland*
M Dobry (Co-Chairman) *France*
M Baethge *Germany*
B Greskovits *Hungary*
M Illner *Czech Republic*
D Lane *United Kingdom*
L Morlino *Italy*
I Papadopoulos *Switzerland*
H van der Wusten *The Netherlands*
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Scientific networks at a glance

ESF scientific networks are supported by the General Budget to which all Member Organisations contribute.

Medical sciences

Networks	Duration	Affiliation*
Development of Methods to Investigate the Interaction between Nutritional Environmental and Genetic Factors in Early Human Development: demonstration project on orofacial clefts	1998-2001	EMRC
Genetic Susceptibility to Environmental Toxicants – Impacts on Human Health	1998-2001	EMRC
Multiple Primary Tumours in Oral Cancer: aetiology and clinical significance	1997-2000	EMRC

Life and environmental sciences

Networks	Duration	Affiliation*
Alpine Biodiversity (ALPNET)	1997-2000	LESC
Changing Land Use and its Impact on Biodiversity (CLIMB)	1998-2001	LESC
Exploring the Deep Sub-seafloor Biosphere	1998-2001	LESC
Fossil Insects	1996-1999	LESC
Hominoid Evolution and Environmental Change in the Neogene of Europe	1995-1998	LESC
Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic (CLIMPACT)	1997-2000	LESC

Physical and engineering sciences

Networks	Duration	Affiliation*
Elementary Steps of Layer Growth in the Fabrication of Novel Materials by Atomic Layer Epitaxy (ALENET)	1998-2001	PESC
Field-responsive Polymers, Composite Organic Materials and Gels with Controlled Supramolecular Structure	1998-2001	PESC
Silk: properties and production	1998-2001	PESC
Topological Defects	1997-2000	PESC

Humanities

Networks	Duration	Affiliation*
The Convergence and Divergence of Dialects in a Changing Europe	1995-1998	SCH
Early Modern Thought: reconsidering the borderline between the Middle Ages and Early Modern Times	1998-2001	SCH
European Theatre Iconography	1997-2000	SCH
Intersign: sign linguistics and data exchange	1997-2000	SCH
Republicanism: a shared European heritage	1995-1998	SCH
Science and the Visual Image: 1500-1800	1996-1999	SCH

Social sciences

Networks	Duration	Affiliation*
Citizens in Transformation Network (CITNET)	1998-2001	SCSS
Demographic and Labour Force Participation Trends in Europe and their Implications for Social Protection Expenditure	1998-2001	SCSS
European Trade Study Group (ETSG)	1998-2001	SCSS
Household and Community Dynamics: an Eurasian approach of mobility in the past societies	1997-2000	SCSS
Human Reasoning and Decision Making	1997-2000	SCSS
Innovative Practices and Emerging Concepts for Sustainable Urban Management in Developing countries: a European contribution	1998-2001	SCSS
Political-Economic Dimensions of Enlargement and New Membership of the European Union	1996-1998	SCSS
Social Transformations in Central and Eastern Europe	1994-1998	SCSS

* Transdisciplinary networks are listed here under the principal disciplinary area

Exploratory workshops

In a number of scientific domains, exploratory workshops are being viewed by ESF Standing Committees as an increasingly useful instrument for identifying emerging fields requiring action at a European level. Workshops are aimed at helping European research teams to exchange knowledge, establish new links and to explore the possibilities of developing future collaborative actions. In 1998, the ESF organised the following workshops:

European Medical Research Councils (EMRC)

- **The Neurobiology of the Endocannabinoid System: from basic research to therapeutic applications,**
  Madrid, Spain, 22-24 April 98
- **Defective Proteinfolding and Degradation as Disease Mechanism,**
  Sandbjerg Land Estate, Southern Jutland, Denmark, 17-20 June 98
- **Invasive Aspergillosis,**
  Amsterdam, The Netherlands, 21-22 October 98
- **Development of New Molecular and Electronic Methods for Acquisition and Exchange of Microbial Typing Data,**
  Strasbourg, France, 30 October-1 November 98
- European Foundation for the Advancement of Medicine (EFAM) / European Medical Research Councils (EMRC): **Determinants of the North-South European Gradient of Acute Myocardial Infarction (AMI)- Fibrinogen and its Genetic Polymorphism and Infection,**
  Santa Maria Imbaro, Italy, 20-21 November 98
- **Clinical Trials,**
  Paris, France, 18 December 98
- **Human Gene Expression Mapping,**
  Paris, France, 21-22 December 98

Life and environmental sciences

- **Design of Artificial Proteins, and Selection and Structural Analysis of Functional Molecular Recognition Units,**
  Brussels, Belgium, 5-6 June 98
- **Environmental Change and Vertebrate Population Dynamics,**
  Cambridge, United Kingdom, 5-7 June 98
- **Transglutaminases and Protein Cross-linking,**
  Jena, Germany, 19-21 June 98
- **Shape and Size in Skeletal Morphogenesis,**
  Cambridge, United Kingdom, 3-5 September 98
- **Ocean Margins,**
  Kiel, Germany, 10-11 September 98
- **Signal Transduction by Phosphorylation: integrating structure and function,**
  Hamburg, Germany, 22-25 September 98

European marine and polar science

- **LOIRA – Land Ocean Interaction in the Russian Arctic (EPB, IASC),**
  Moscow, Russia, 15-17 January 98
- **Nordic Seas (EPB/ACSYS),**
  Tromso, Norway, 23 August 98
- **Automatic Platforms fed by Renewable Energy,**
  Bremerhaven, Germany, 17-18 September 98

Humanities

The Standing Committee for the Humanities runs a scheme of European Research Workshops. For 1998, the following Workshops have been awarded:

- **Early Medieval Europe,**
  Strasbourg, France, 17-18 April 98
- **Ecological Change and Food Security in Africa's Later Prehistory,**
  London, United Kingdom, 3-5 September 98
- **Ethics, Family and Reproductive Technology,**
  Hull, United Kingdom, 1-3 April 98
- **The Shi'i Century and the Iranian Milieu,**
  Oxford, United Kingdom, 11-14 June 98

Social sciences

The Standing Committee for the Social Sciences also runs a scheme of exploratory grants. For 1998, grants have been awarded to eight European research teams on the following topics. Project leaders are indicated below.

- **Corporate Governance Performance Pressures and Product Innovation in European-based Companies: a preliminary comparative study,**
  A Tylecote,
  Sheffield University, United Kingdom
- **The Law and Economics of Very Large Accidents in Europe,**
  G Skogh,
  Linköping University, Sweden
- **Modelling Processes Involved in the Construction of Citizenship and European Identity among Young People: a social psychological approach,**
  E Lyons,
  University of Surrey, United Kingdom
- **The Public/Private Interface in Social Policy,**
  B Hvinden,
  The Norwegian University of Science and Technology, Dragvoll, Norway
- **Risk Perceptions and Distributional Judgements,**
  F Cowell,
  London School of Economics, United Kingdom
- **Social Anthropology of Institutions, Networks and Representations in the New Europe,**
  B Müller,
  Centre Français de Recherches en Sciences Sociales, Prague, Czech Republic
- **Sustainability, Risk and Nature: the political-ecology of water in advanced societies,**
  E Swyngedouw,
  University of Oxford, United Kingdom
- **Young People, Citizenship and European Identity in Scotland/UK, Cataluña/Spain, Austria and the Eastern Part of Germany,**
  L Jamieson,
  University of Edinburgh, United Kingdom

European research conferences in 1998

European Research Conferences provide a platform for high-level discussions of scientific issues, with opportunities for younger scientists to get involved.

Physics

- **Cluster - Surface Interactions: fundamentals,**
  T Märk (Innsbruck) - Cargese (Corsica), France, 23-28 May
- **Fundamental Aspects of Surface Science: elementary processes in surface reactions,**
  M Persson (Göteborg) - Acquafredda di Maratea, Italy, 20-25 June
- **Computational Physics for Nanotechnology: atomic and electronic dynamics in nanostructures,**
  A Fischer (London) - Castelvecchio Pascoli, Italy, 19-24 September
- **Quantum Optics: atom cooling and guiding, laser spectroscopy and squeezing,**
  M A Ducloy (Villetaneuse) - Castelvecchio Pascoli, Italy, 29 September-4 October

Chemistry

- **Organic Electrochemistry: moving towards clean and selective synthesis,**
  J H P Utley (London) and D Pletcher (Southampton) - La Londe les Maures, France, 15-19 April
- **Stereochemistry,**
  M T Reetz (Mülheim an der Ruhr) - Bürgenstock, Switzerland, 26 April-2 May
- **Molten Salts: from structural aspects to waste processing,**
  M Gaune-Escard (Marseille) - Porquerolles Island (near Giens), France, 27 June-3 July
- **Reactivity in Organized Microstructures: structure, dynamics and functionality in nanoscopic systems,**
  W Knoll (Mainz) - Wiesbaden-Naurod, Germany, 18-23 July
- **Inorganic Chemistry: design of functional systems, inorganic, environmental and medicinal challenges,**
  P Braunstein (Strasbourg) - San Feliu de Guixols, Spain, 4-9 September
- **Supramolecular Chemistry: advanced materials,**
  R J M Nolte (Nijmegen) - near Kerkrade, The Netherlands, 10-15 September

Materials

- **Plasticity of Materials: fundamentals, modelling and applications,**
  H Mughrabi (Erlangen) - Granada, Spain, 25-30 April
- **Surface Engineering for Protection of Metals and Alloys: surface state of metals and alloys and its modification for protection,**
  H J Grabke (Düsseldorf) - Granada, Spain, 21-26 August

Life sciences

- **Biophysics of Cytoskeleton,**
  E Sackmann (Garching) - Obernai (near Strasbourg), France, 22-27 April
- **Neural Mechanisms of Learning and Memory: dynamics of the trace,**
  S J Sara (Paris) - Acquafredda di Maratea, Italy, 9-14 May
- **Developmental Biology: the genetic control of morphogenesis,**
  R Beddington (London) - Lenggries, Germany, 6-11 June
- **Gene Transcription in Yeast: role of chromatin and transcription factors,**
  A Sentenac (Gif-sur-Yvette) - Granada, Spain, 11-16 September
- **Exocytosis: membrane dynamics in exocytosis: molecular mechanisms,**
  T Kreis (Genève) - Giens (near Toulon), France, 26 September-1 October

Biomedicine and health

- **Inherited Disorders and their Genes in Different European Populations,**
  J Bertranpetit (Barcelona) - Acquafredda di Maratea, Italy, 6-11 February
- **Brain Development and Cognition in Human Infants: development and functional specialization of the cortex,**
  M-S De Schonen (Marseille) - San Feliu de Guixols, Spain, 23-28 September
- **B-Cells in Health and Disease: B-cells and autoimmunity,**
  F K Stevenson (Southampton) - Acquafredda di Maratea, Italy, 9-14 October

Geosciences and environment

- **Natural and Anthropogenically Induced Hazards: frequency-magnitude relationships in earthquake and fault populations: implications for seismic hazard,**
  R E Ll Collier (Leeds) - Acquafredda di Maratea, Italy, 16-22 May
- **Geochemistry of Crustal Fluids: characterisation of reactive transport in natural systems,**
  E H Oelkers (Toulouse) - Aghia Pelaghia, Crete, Greece, 22-27 May
- **Natural Waters and Water Technology: catalytic science and technology for water,**
  A Vaccari (Bologna) - Acquafredda di Maratea, Italy, 3-8 October

Social sciences

- **Migration and Development: first generation immigration, labour demand and the dynamics of social exclusion,**
  T Bengtsson (Lund) - Espinho, Portugal, 21-26 April
- **European Societies or European Society?: inequality and social exclusion in Europe: the role of the family and social networks,**
  C T Whelan (Dublin) - Castelvecchio Pascoli, Italy, 3-7 April

Humanities

- **The Structure of Learner Language: from pragmatics to syntax: organizational principles of second language acquisition,**
  A Giacalone Ramat (Pavia) - Acquafredda di Maratea, Italy, 26 September-1 October
- **Women in the Christian Tradition,**
  N Damsholt (Copenhagen) - Seefeld (Tyrol), Austria, 23-28 October

For a copy of the 1999 Conference programme and application forms, contact the Head of the EURESCO Unit:

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Email: euresco@esf.org

On-line information and application on www server:
http://www.esf.org/euresco

ESF publications in 1998

The ESF disseminates information about its activities through a variety of channels, including a wide range of publications, from annual reports to *ESF Communications*, the Foundation's biannual journal. Listed here are a selection of publications resulting from ESF activity in 1998. Up-to-date information on the Foundation's activities is also available at its World Wide Web site (http://www.esf.org).

Corporate publications

ESF Plan
68 pp. ISBN 2-903148-96-1. ESF, March 1998

About the ESF 1998
40 pp. ESF, March 1998

ESF Annual Report 1997
(English version)
83 pp. ISBN 2-903148-98-8

Rapport annuel de l'ESF 1997
(French version)
83 pp. ISBN 2-903148-99-6
European Science Foundation, Strasbourg, France, 1998

European Science Policy Briefings

Further considerations on the EC's proposal for a Fifth Framework Programme
N°1. 12 pp. ESF, October 1997

Social science research in the Fifth Framework Programme
Report of an ESF workshop, Stockholm, 10 October 1997
N°2. 16 pp. ESF, February 1998

Consensus conference on the theory and practice of research assessment
N°3. 32 pp. ESF, June 1998

Managing the Fifth Framework Programme
N°4. 6 pp. ESF, June 1998

Environment and Health (ENHE)

Environment and Health Research for Europe
Scientists' recommendations
An ESF position paper, ESF, *Strasbourg, France, September 1998*

An Environment for Better Health (Part one)
Integrated Report of the ESF Environment and Health Programme
79 pp. Edited by R Kroes, ESF, Strasbourg, France, September 1998

An Environment for Better Health (Part two)
Annexes to the Integrated Report of the ESF Environment and Health Programme
ESF, Strasbourg, France, September 1998

Large Research Facilities

Review of the needs for European Synchrotron and related beam-lines for biological and biomedical research
ISBN 2-912049-02-4. Price: 175 FF
Published by the European Science Foundation
ESF, Strasbourg, France, November 1998

The Scientific Case for a European Laboratory for 100 Tesla Science
ISBN 2-912049-04-0. Price: 150 FF
Published by the European Science Foundation
ESF, Strasbourg, France, November 1998

Survey of the Neutron Scattering Community and Facilities in Europe
16 pp. ISBN 2-912049-00-8. Price: 75 FF
Published by the European Science Foundation and the European Neutron Scattering Association
ESF, Strasbourg, France, September 1998

A Twenty Years Forward Look at Neutron Scattering Facilities in the OECD Countries and Russia
ISBN 2-912049-03-2. Price: 75 FF
Edited by D Richter and T Springer
Published by the European Science Foundation and the OECD Megascience Forum
ESF, Strasbourg, France, November 1998

Space-based science

U.S.-European Collaboration in Space Science
161 pp. ISBN 0-309-05984-4
Edited by the European Space Science Committee (ESSC) of the European Science Foundation (ESF) and the Space Studies Board (SSB) of the US National Research Council.
Co-published by the US National Academy Press and the European Science Foundation, 1998

Life and environmental sciences

European Lake Drilling Programme (ELDP)

Mediterranean Lacustrine Records
Terra Nostra 98/6.ISSN 0946-8978

European marine and polar science

EMaPS Annual Report 1997
20 pp. ESF, March 1998

A European science plan on marine biodiversity
20 pp. ISBN 2-903148-97-X
Edited by C Heip, R Warwick and L d'Ozouville
ESF, Strasbourg, France, June 1998

European Palaeoclimate and Man (EPC)

Documentary climatic evidence for 1750-1850 and the fourteenth century
Special issue: ESF Project
Edited by E Wishman, B Frenzel and M M Weiß. 192 pp. ISBN 3-437-25396-4, ISSN 0930-4673
Published by Gustav Fischer Verlag, Germany, 1998

Quantification of land surfaces cleared of forests during the Holocene – Modern pollen / vegetation / landscape relationships as an aid to the interpretation of fossil pollen data
Special issue: ESF Project
Edited by M-J Gaillard and B E Berglund. 148 pp. ISBN 3-437-25706-4, ISSN 0930-4673
Published by Gustav Fischer Verlag, Germany, 1998

Fossil Insects

Meganeura n°1
Palaeoentomological newsletter
28 pp. ESF, January 1998

Meganeura n°2
Palaeoentomological newsletter
32 pp. ESF, August 1998

Greenland Ice Core Project (GRIP)

Greenland Summit Ice Cores
Greenland Ice Sheet Project 2
Reprinted from Journal of Geophysical Research
371 pp. Published by the American Geophysical Union, Washington, D.C. 1998

Polar North Atlantic Margin: Late Cenozoic Evolution (PONAM)

Glacial and Oceanic History of the Polar North Atlantic Margins
Quaternary Science Reviews 17/1-3 (1998)
Edited by A Elverhøi, J Dowdeswell, S Funder, J Mangerud and R Stein
Published by Elsevier Science Ltd, 1998

Programme brochures

Transport Processes in the Atmosphere and Oceans (TAO)
An ESF scientific programme
8 pp. ESF, Strasbourg, France, February 1998

Theoretical Biology of Adaptation (TBA)
An ESF scientific programme
8 pp. ESF, Strasbourg, France, September 1998

European Project for Ice Coring in Antarctica (EPICA)
A joint ESF/EC scientific programme
8 pp. ESF, Strasbourg, France, October 1998

Groundwater Pollution (GPoll)
An ESF scientific programme
6 pp. ESF, Strasbourg, France, October 1998

Physical and engineering sciences

Converging Computing Methodologies in Astronomy (CCMA)
Advanced Techniques and Methods for Astronomical Information Handling
Proceedings of the Sonthofen Conference, 17-18 September 1997
M C Maccarone, F Murtagh, M Kurtz, A Bijaoui. 121 pp.
Published by Observatoire de la Côte d'Azur, France 1998

Vistas in Astronomy
An International Review Journal
Special issue: From Information Fusion to Data Mining. CCMA Workshop, Granada, Spain, 18-19 April 1997
Guest Editors: R Molina, F Murtagh and A Heck.
Published by Elsevier Science Ltd, Exeter, United Kingdom, 1998

Nuclear Physics European Collaboration Committee (NuPECC)

Nuclear Physics in Europe: Highlights and opportunities
144 pp. Published by NuPECC, France, 1998

Vapour-Phase Synthesis and Processing of Nano-Particle Materials (NANO)

Aerosols for Nanostructured Materials and Devices
First Joint ESF-NSF Symposium, Edinburgh, Scotland, 12 September 1998. Book of Abstracts
120 pp. ISSN 1436-509X.
Edited by F Otten and H Fissan.
Published by the Gerhard Mercator Universität Gesamthochschule Duisburg, Germany, August 1998

Programme brochure

Highly Structured Stochastic Systems (HSSS)
An ESF scientific programme
ESF, January 1998

Humanities

Asian Studies

Guide to Asian Studies in Europe
340 pp ISBN 070071 1054 X.
Curzon Press, 1998

Concepts and Symbols of the Eighteenth Century in Europe (CSE)

Concepts and Symbols of the Eighteenth Century in Europe
Newsletter 5
16 pp. ESF, February 1998

The Evolution of Chemistry in Europe 1789–1939 (HIOC)

The Evolution of Chemistry in Europe 1789-1939
Final report
24 pp. ISBN 2-912049-01-6
ESF, Strasbourg, France, September 1998

The Chemical Industry in Europe, 1850-1914
Industrial Growth, Pollution, and Professionalization
ISBN 0-7923-4889-3
Edited by E Homburg, A S Travis and H G Schröter. Published by Kluwer Academic Publishers, 1998

Determinants in the Evolution of the European Chemical Industry, 1900-1939
New Technologies, Political Frameworks, Markets and Companies
ISBN 0-7923-4890-7
Edited by A S Travis, H G Schröter, E Homburg and P J T Morris.
Published by Kluwer Academic Publishers, 1998

Individual and Society in the Mediterranean Muslim World (ISMM)

Individual and Society in the Mediterranean Muslim World: Issues and Sources
160 pp. ISBN 2-9512731-0-X.
Price: 79 FF
Edited by R Ilbert and R Deguilhem, June 1998

National Socialist Occupation Policy (NSO)

Die Bürokratie der Okkupation Strukturen der Herrschaft und Verwaltung im besetzen Europa
Band 4
W Benz, J Houwink ten Cate, G Otto
223 pp. ISBN 3-932482-04-2
Published by Metropol Verlag, Germany, 1998

Origins of the Modern State (OMS)

Iconography, Propaganda, and Legitimation
Edited by A Ellenius.
ISBN 0-19-820550-3
Published by Clarendon Press, 1998

The Transformation of the Roman World (TRW)

The Sixth Century
Production, Distribution and Demand
R Hodges, W Bowden
301 pp. ISBN 1386-4165, ISSN 900410980-3
Published by Brill, Netherlands, 1998

Strategies of Distinction
The Construction of Ethnic Communities, 300-800
Edited by W Pohl with H Reimitz.
ISBN 90-04-108467
Published by Brill, Netherlands, 1998

Typology of Languages in Europe (EUROTYP)

Constituent Order in the Languages of Europe
Volume 1
A Siewierska 829 pp. ISBN 3-11-01-5152-9
Published by Mouton de Gruyter, Germany, 1998

Actance et Valence dans les Langues de l'Europe
Volume 2
J Feuillet 975 pp. ISBN 3-11-015749-7
Published by Mouton de Gruyter, Germany, 1998

Programme brochure

Musical Life in Europe, 1600-1900
An ESF humanities programme
ESF, Strasbourg, France, September 1998

Standing Committee for the Humanities

Reflections
The newsletter of the Standing Committee for the Humanities
N°2, 8 pp.
ESF, Strasbourg, France, May 1998

Social sciences

Social Transformation in Central and Eastern Europe

Postcommunist Elites and Democracy in Eastern Europe
301 pp. ISBN 0-333-71564-0 (World excluding North America)
ISBN 0-312-21179-1 (in North America)
Edited by J Higley, J Pakulski and W Wesolowski
Published by Macmillan Press Ltd in Great Britain and St. Martin's Press Inc. in the United States

Geographic Information Systems: data integration and data base design (GISDATA)

European Geographic Information Infrastructures opportunities and pitfalls
172 pp. ISBN 0-7484-0755-3 (hard)
ISBN 0-7484-0756-1 (paperback)
Edited by P Burrough and I Masser
Series Editors: I Masser and F Salgé
Published by Taylor and Francis Ltd, United Kingdom, 1998

European Management and Organisations in Transition (EMOT)

The Diffusion and Consumption of Business Knowledge
318 pp. ISBN 0-333-68528-8 (World excluding North America)
ISBN 0-312-17666-X (in North America)
Edited by J L Alvarez
Published by Macmillan Press Ltd in Great Britain and St. Martin's Press Inc. in the United States, 1998

Industrial Transformation in Eastern Europe in the Light of the East Asian Experience
255 pp. ISBN 0-333-68208-4 (World excluding North America)
ISBN 0-312-21190-2 (in North America)
Edited by J Henderson. Assisted by K Balaton and G Lengyel
Published by Macmillan Press Ltd in Great Britain and St. Martin's Press Inc. in the United States, 1998

Organization Studies
An international multidisciplinary journal devoted to the study of organizations, organizing, and the organized in and between societies
Special Issue on The Organizational Texture of Inter-firm Relations 1998, 19, Issue 4, published by Walter de Gruyter, Berlin/New York

Programme brochure

Blueprint for a European Social Survey (ESS)
An ESF scientific programme
ESF, March 1998

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Finance and accounts

In order to provide the latest available information on ESF Finances, the 1998 audited Accounts are published in this Report. These accounts have been presented to and discussed by the Finance Committee at its March meeting, the Executive Council at its May meeting and will be presented to the Assembly in November 1999. Any modification requested will be clearly identified in next year's Report.

The running of the ESF and its activities is funded by contributions from ESF Member Organisations.

The GENERAL BUDGET is used to finance the running of the ESF Secretariat (staff, administrative costs, statutory meetings, equipment) and the general scientific activity (meetings of the Standing Committees and of the working groups, cost of various workshops - especially those needed in the preparation of ESF Scientific Programmes; publications).

Table 1 presents the Inflow and Use of Funds in 1998. The Balance Sheet on 31 December 1998 and 1997 is given in Table 2.

In November 1998, the Assembly approved the 1999 General Budget, amounting to 35 080 kFF. It is itemised in Table 3.

From 1998 onwards, the General Budget includes the Network Account as one of the headings of expenditure.

All ESF Member Organisations contribute to the General Budget according to a scale of contributions set out according to the statute (Table 4).

In addition to the activities funded from the General Budget, other activities are funded *à la carte* only by those Member Organisations which are interested in participating. These activities are named Scientific Programmes (Additional Activities and Associated Programmes).
The ESF also runs some 'special budgets' (funds received from various non-ESF Organisations, 'workshop funds' established by Member Organisations and run by the ESF, etc). Amongst these special budgets are the accounts for the Programme of European Research Conferences (EURESCO) and for the European Boards for Marine and Polar Science.

In order to provide an overview of all the funds managed by the ESF, Consolidated Accounts are presented in Table 5, and the Consolidated Balance Sheet on 31 December 1998 in Table 6.

Table 1: **1998 General Budget (in FF)**

Use of Funds		
1. 1998 Expenditure on Budget		30 879 535.12
2. Carry forward to 1999		
(committed to reduce the 1999 Call)		1 660 000.00
3. Transfer to 'Provision for Scientific Networks'		2 238 015.91
4. Transfer to 'Provision for Equipment/Works'		232 095.51
5. Transfer to 'Provision for doubtful debts'		109 328.82
6. Transfer to 'Provision for new accounting software'		100 546.53
7. Transfer to 'Provision for EURESCO'		950 000.00
8. Transfer to the Working Capital*		70 291.31
Total Use of Funds		36 239 813.20
Excess of Inflow over Use of Funds		2 649 158.27
• Unused part of General Budget	1 619 873.34	
• Additional income in 1998	1 029 284.93	
		38 888 971.47

Inflow of Funds		
1. Brought forward from 1997		3 660 336.21
1.1• 1997 Excess of Inflow over Use of Funds on former General Budget	838 646.83	
1.2• 1997 Excess of Inflow over Use of Funds on former Network Account	841 689.38	
- budgeted 350 000.00		
- additional 491 689.38		
1.3• 1997 interest committed to reduce the 1998 Call	1 980 000.00	
2. Contributions from Member Organisations		30 650 000.00
2.1• for the General Budget	30 500 000.00	
2.2• for the Provision for EURESCO	150 000.00	
3. Bringing forward of previous Provision for EURESCO		800 000.00
4. Transfers for management costs		2 004 875.00
4.1• budgeted	1 775 000.00	
4.2• additional	229 875.00	
5. 1998 Bank interest		891 644.48
6. Bringing forward of unused Provision for doubtful debts		500 000.00
• from former General Budget	417 294.15	
• from former Network Account	82 705.85	
7. Miscellaneous income:		382 115.78
• payment by the Austrian Government for AUSTRON/EUROCRYST study	275 000.00	
• EFAM grant for a workshop	102 140.82	
• Sale of publications	4 974.96	
Total Inflow of Funds		**38 888 971.47**

* New denomination of the former Reserve Fund, as recommended by the Finance Committee

Table 2: **General Budget: Balance Sheet on 31 December 1998 and 1997 (in FF)**

Assets	1998	1997
Fixed Assets	981 510.72	1 061 223.03
(furniture and office equipment)		
Current Assets		
• Contributions expected from Member Organisations	2 714 727.92	2 245 499.03
• Paid in advance	177 114.69	43 526.35
• Accounts receivable	—	31 409.86
• Securities	40 757 227.33	32 146 364.24
• Cash in bank	—	825 061.44
• Cash in hand	2 007.65	761.35
	44 632 588.31	**36 353 845.30**

Liabilities	1998	1997
Capital Endowment	981 510.72	1 061 223.03
Working Capital*	3 912 802.18	3 842 510.87
Provision for Scientific Networks	2 238 015.91	—
Provision for EURESCO	1 950 000.00	1 800 000.00
Provision for Doubtful Debts	745 107.02	1 135 778.20
Provision for Equipment/Works	296 423.29	64 327.78
Provision for New Accounting Software	100 546.53	—
Current Liabilities		
• Accounts payable	2 260 443.09	2 403 029.19
• Commitment for SCSS Grants	—	238 212.07
• Clearing account	990 683.10	61 960.78
• Collected or received in advance	3 136 276.00	1 980 000.00
• Cash owed to the bank**	24 870 879.90	21 696 815.87
• Bank interest received after respectively15/10/98 and 14/10/97	500 742.30	389 651.30
Excess of inflow of funds over use of funds	2 649 158.27	1 680 336.21
	44 632 588.31	**36 353 845.30**

* New denomination of the former Reserve Fund, as recommended by the Finance Committee

** The cash owed to the bank implies no interest payments to the bank, because the bank takes into account the positive overall balance for all ESF accounts

Table 3: **General Budget for 1998 and 1999 (in kFF)**

	1998	1999
Employment costs	19 405	19 910
Running expenses	2 750	2 750
Scientific and statutory meetings	6 310	6 910
Scientific Networks	3 980	3 800
Publications and publicity	1 400	1 300
Equipment and maintenance work	600	250
Others (incl. Audit costs)	160	160
	34 605	**35 080**

Table 4: **Scale of Contributions**
(Based on net national income at market prices)

	1992	1993/94	1995	1996/97/98	1999/2000/2001
	%	%	%	%	%
Austria	2.24	2.27	2.29	2.33	2.38
Belgium	2.83	2.87	2.69	2.75	2.82
Czech Republic	—	—	—	—	0.45
Denmark	1.95	1.98	1.81	1.78	1.86
Finland	1.51	1.53	1.51	1.25	1.24
France	16.94	17.17	16.63	16.37	16.28
Germany	21.37	21.66	22.91	23.54	23.82
Greece	0,95	0.96	0.98	0.99	1.01
Hungary	0.50	0.51	0.46	0.46	0.51
Iceland	0.10	0.10	0.08	0.08	0.10
Ireland	0.51	0.52	0.55	0.56	0.62
Italy	14.74	14.94	15.03	14.70	13.76
The Netherlands	4.22	4.28	4.10	4.10	4.14
Norway	1.56	1.58	1.39	1.34	1.41
Poland	1.48	1.50	1.14	1.17	1.20
Portugal	0.61	0.62	0.65	0.67	0.85
Slovenia	—	—	—	0.21	0.24
Spain	5.74	5.82	6.16	6.34	6.22
Sweden	3.11	3.15	3.16	2.84	2.81
Switzerland	3.54	3.59	3.43	3.35	3.38
Turkey	1.14	1.16	1.22	1.25	1.49
United Kingdom	13.60	13.79	13.81	13.92	13.41
Yugoslavia	1.36	—	—	—	—
	100.00	**100.00**	**100.00**	**100.00**	**100.00**

- Figures for 1992 and 1993/1994 are based on net national incomes for the years 1986, 1987 and 1988.
- Figures for 1995 are based on net national incomes for the years 1990, 1991 and 1992.
- Before 1995 income figures used for Germany were for the Federal Republic. Since 1995 they are for the reunified Germany.
- Figures for 1996, 1997 and 1998 are based on net national incomes for the years 1991, 1992 and 1993.
- The scale for 1999/2000/2001 uses the set of national income figures for 1993, 1994 and 1995, the three latest years for which statistics from the United Nations were available but, it is introduced a lump percentage contribution of 0.1 % for the first organisation in a national group and of 0.05 % for the next ones.

Table 5: **1998 Consolidated Inflow and Use of Funds (in FF)**

	Use of Funds				
	General Budget	Scientific Programmes & Assoc. Committees	Special Budgets	Excess of Inflow over Use of Funds	Total
General Budget	36 239 813.20			2 649 158.27	38 888 971.47
AA Airborne Polar Experiment		665 890.54		130 321.22	796 211.76
AA Applied Mathematics for Industrial Flow Problems		897 087.77		384 124.14	1 281 211.91
AA Artificial Biosensing Interfaces		884 451.39		26 143.95	910 595.34
AA Asian Studies Workshops		671 645.70			671 645.70
AA Biophysics of Photosynthesis		911 494.25		95 817.79	1 007 312.04
AA Blueprint for a European Social Survey		322 595.03		320 113.48	642 708.51
AA Chemistry of Metals in Biological Systems		380 263.06			380 263.06
AA Comparative Studies of Economic Organisations		19 028.12		338 971.88	358 000.00
AA Concepts and Symbols of the 18th Century in Europe		479 430.77		885 909.17	1 365 339.94
AA Control of Complex Systems		776 922.60		725 131.53	1 502 054.13
AA Cyanobacterial Nitrogen Fixation		62 819.31		477 380.69	540 200.00
AA Database of Quaternary Mammals of Europe		50 000.00			50 000.00
AA Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces (STRUC- ψ κ)		503 485.48		343 714.52	847 200.00
AA Environment and Health		1 203 171.85		403 045.44	1 606 217.29
AA European Ice Sheet Modelling Initiative		470 780.54		384 311.69	855 092.23
AA European Lake Drilling Programme		219 973.13		553 709.51	773 682.64
AA European Management and Organisations in Transition		125 461.95			125 461.95
AA European Project of Ice Coring in Antarctica		215 801.04		193 053.45	408 854.49
AA EUROPROBE		1 214 347.53		160 599.50	1 374 947.03
AA The Evolution of Chemistry in Europe 1789-1939		323 832.83		890.82	324 723.65
AA SCSS Exploratory Research Grant Scheme		1 125 516.20		154 401.35	1 279 917.55
AA Fermi-liquid Instabilities in Correlated Metals		254 819.15		337 180.85	592 000.00
AA Geodynamics and Ore Deposit Evolution		329 608.14		246 916.87	576 525.01
AA Geographic Information Systems: data integration and data base design		420 540.65		42 012.06	462 552.71
AA Ground Water Pollution		727 684.48		88 244.90	815 929.38
AA Highly Structured Stochastic Problems		450 098.28		467 566.86	917 665.14
AA Immunogenetics of Allergy: towards prevention and care		865 340.32		57 437.81	922 778.13
AA Individual and Society in the Mediterranean Muslim World		1 112 680.16		583 717.81	1 696 397.97
AA Language Typology		545 000.00		242 790.17	787 790.17
AA Learning in Humans and Machines		694 115.73		85 765.53	779 881.26
AA Kinetic Processes in Minerals and Ceramics		76 512.06			76 512.06
AA Mathematical Treatment of Free Boundary Problems		261 271.96			261 271.96
AA Molecular Magnets		471 567.26		258 432.74	730 000.00
AA Musical Life in Europe 1600-1900: circulation, institutions, representation		579 562.86		425 437.14	1 005 000.00
AA Nanomagnetism and Growth Processes on Vicinal Surfaces		162 106.23		432 893.77	595 000.00
AA Plant Adaptation		832 061.98		105 191.61	937 253.59
AA Population Biology		930 077.84		25 939.94	956 017.78
AA Probabilistic Methods in Non-Hyperbolic Dynamics		301 612.90		463 387.10	765 000.00
AA Process Integration in Biochemical Engineering		477 868.85			477 868.85
AA Quaternary Environment of the Eurasian North		472 776.36		377 103.12	849 879.48
AA Relativistic Effects in Heavy Element Chemistry and Physics		271 999.40			271 999.40
AA Response of the Earth System to Impact Processes		253 093.04		252 906.96	506 000.00
AA Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures		121 729.04		553 270.96	675 000.00
AA Tackling Environmental Resource Management		469 118.25		1 617 725.57	2 086 843.82
AA Theoretical Biology of Adaptation		502 125.58		462 374.42	964 500.00
AA Transformation of the Roman World		637 983.47		130 056.90	768 040.37
AA Transport Processes in the Atmosphere and Oceans		551 428.19		277 698.94	829 127.13
AA Tropical Canopy Research		803 495.14		368 941.18	1 172 436.32
AA Vapour-phase Synthesis and Processing of Nano-particle Materials		487 799.70		583 032.12	1 070 831.82
AP Developmental Biology		393 491.74			393 491.74
AP European Neuroscience Programme		451 723.96			451 723.96
AP ESF Consortium for Ocean Drilling		554 038.01		369 971.31	924 009.32
AP Molecular Neurobiology of Mental Illness				178 129.31	178 129.31
AC Nuclear Physics European Collaboration Committee		905 151.19		306 823.40	1 211 974.59
AC European Space Science Committee		612 922.71		(15 261.60)	597 661.11
General Account for Scientific Programmes		3 216 458.12		385 230.82	3 601 688.94
SB Asian Studies Fellowships			1 956 857.52	300 794.97	2 257 652.49
SB CEC Popularising European Science			44 408.31		44 408.31
SB EERO			178 805.51		178 805.51
SB European Research Conferences			11 326 868.57	206 348.51	11 533 217.08
SB European Marine and Polar Science			2 125 077.52	346 745.20	2 471 822.72
SB British Academy				23 816.84	23 816.84
SB CNR Special Account				11 269.05	11 269.05
SB ESRC				102 860.54	102 860.54
SB NWO Special Fund				8 939.17	8 939.17
SB GOA				912.68	912.68
Earlier Contributions written-off					
Total	**36 239 813.20**	**31 721 861.84**	**15 632 017.43**	**18 939 403.93**	**102 533 096.40**

AA = Additional Activity AC = Associated Committee SB = Special Budget AP = Associated Programme

Inflow of Funds					
	General Budget	Scientific Programmes & Assoc. Committees	Special Budgets	Carried over from 1997	Total*
General Budget	33 928 635.26			4 960 336.21	38 888 971.47
AA Airborne Polar Experiment		715 000.00		81 211.76	796 211.76
AA Applied Mathematics for Industrial Flow Problems		850 000.00		431 211.91	1 281 211.91
AA Artificial Biosensing Interfaces		744 300.00		166 295.34	910 595.34
AA Asian Studies Workshops		173 954.62		537 691.08	711 645.70
AA Biophysics of Photosynthesis		752 500.00		254 812.04	1 007 312.04
AA Blueprint for a European Social Survey				642 708.51	642 708.51
AA Chemistry of Metals in Biological Systems				380 263.06	380 263.06
AA Comparative Studies of Economic Organisations		358 000.00			358 000.00
AA Concepts and Symbols of the 18th Century in Europe				1 365 339.94	1 365 339.94
AA Control of Complex Systems		892 920.41		609 133.72	1 502 054.13
AA Cyanobacterial Nitrogen Fixation		540 200.00			540 200.00
AA Database of Quaternary Mammals of Europe				50 000.00	50 000.00
AA Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces (STRUC- ψ k)		847 200.00			847 200.00
AA Environment and Health		1 380 580.00		225 637.29	1 606 217.29
AA European Ice Sheet Modelling Initiative				855 092.23	855 092.23
AA European Lake Drilling Programme		495 000.00		278 682.64	773 682.64
AA European Management and Organisations in Transition				125 461.95	125 461.95
AA European Project of Ice Coring in Antarctica		310 000.00		98 854.49	408 854.49
AA EUROPROBE		1 424 000.00		(49 052.97)	1 374 947.03
AA The Evolution of Chemistry in Europe 1789-1939				324 723.65	324 723.65
AA SCSS Exploratory Research Grant Scheme		1 279 917.55			1 279 917.55
AA Fermi-liquid Instabilities in Correlated Metals		592 000.00			592 000.00
AA Geodynamics and Ore Deposit Evolution		576 525.01			576 525.01
AA Geographic Information Systems: data integration and data base design				462 552.71	462 552.71
AA Ground Water Pollution		815 929.38			815 929.38
AA Highly Structured Stochastic Problems		610 000.00		307 665.14	917 665.14
AA Immunogenetics of Allergy: towards prevention and care		872 000.00		50 778.13	922 778.13
AA Individual and Society in the Mediterranean Muslim World		1 142 958.75		553 439.22	1 696 397.97
AA Language Typology				787 790.17	787 790.17
AA Learning in Humans and Machines				779 881.26	779 881.26
AA Kinetic Processes in Minerals and Ceramics				76 512.06	76 512.06
AA Mathematical Treatment of Free Boundary Problems				441 271.96	441 271.96
AA Molecular Magnets		730 000.00			730 000.00
AA Musical Life in Europe 1600-1900: circulation, institutions, representation		1 005 000.00			1 005 000.00
AA Nanomagnetism and Growth Processes on Vicinal Surfaces		595 000.00			595 000.00
AA Plant Adaptation		870 000.00		67 253.59	937 253.59
AA Population Biology		856 593.52		99 424.26	956 017.78
AA Probabilistic Methods in Non-Hyperbolic Dynamics		765 000.00			765 000.00
AA Process Integration in Biochemical Engineering				477 868.85	477 868.85
AA Quaternary Environment of the Eurasian North		500 000.00		349 879.48	849 879.48
AA Relativistic Effects in Heavy Element Chemistry and Physics				271 999.40	271 999.40
AA Response of the Earth System to Impact Processes		506 000.00			506 000.00
AA Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures		675 000.00			675 000.00
AA Tackling Environmental Resource Management		1 185 000.00		901 843.82	2 086 843.82
AA Theoretical Biology of Adaptation		964 500.00			964 500.00
AA Transformation of the Roman World				768 040.37	768 040.37
AA Transport Processes in the Atmosphere and Oceans		640 000.00		189 127.13	829 127.13
AA Tropical Canopy Research		470 000.00		702 436.32	1 172 436.32
AA Vapour-phase Synthesis and Processing of Nano-particle Materials		926 800.00		144 031.82	1 070 831.82
AP Developmental Biology				393 491.74	393 491.74
AP European Neuroscience Programme		15 894.34		435 829.62	451 723.96
AP ESF Consortium for Ocean Drilling		809 101.24		114 908.08	924 009.32
AP Molecular Neurobiology of Mental Illness				178 129.31	178 129.31
AC Nuclear Physics European Collaboration Committee		900 371.22		311 603.37	1 211 974.59
AC European Space Science Committee		562 500.00		35 161.11	597 661.11
General Account for Scientific Programmes		1 594 600.12		2 007 088.82	3 601 688.94
SB Asian Studies Fellowships			26 161.62	2 231 490.87	2 257 652.49
SB CEC Popularising European Science			1 773.05	42 635.26	44 408.31
SB EERO				178 805.51	178 805.51
SB European Research Conferences			10 865 562.76	667 654.32	11 533 217.08
SB European Marine and Polar Science			2 074 165.39	397 657.33	2 471 822.72
SB British Academy				23 816.84	23 816.84
SB CNR Special Account				11 269.05	11 269.05
SB ESRC				102 860.54	102 860.54
SB NWO Special Fund				8 939.17	8 939.17
SB GOA			847.38	65.30	912.68
Earlier Contributions written-off				(220 000.00)	(220 000.00)
Total	**33 928 635.26**	**29 944 346.16**	**12 968 510.20**	**25 691 604.78**	**102 533 096.40**

* When, on a same line, figures in the last column (Total inflow of funds) are higher than figures in the last column on the opposite page (Total use of funds) this denotes that earlier contributions have been written off (see last line)

Table 6: **Consolidated Balance Sheet on 31.12.1998 (in bold) and 31.12.1997 (in FF)**

Assets	General Budget	Scientific Programmes & Assoc. Committees	Special Budgets	Total
Furniture and office equipment	**981 510.72**	—	—	**981 510.72**
	1 061 223.03	—	—	1 061 223.03
Contributions expected from Member Organisations	**2 714 727.92**	**2 795 365.00**	**295 000.00**	**5 805 092.92**
	2 245 499.03	2 741 040.00	552 200.00	5 538 739.03
Contributions received on General Budget	—	**990 000.00**	—	**990 000.00**
	—	—	—	—
Payments expected from the European Union	—	—	**1 755 939.75**	**1 755 939.75**
	—	—	2 486 632.41	2 486 932.41
Accounts receivable	—	**211 504.73**	**12 700.00**	**224 204.73**
	31 409.86	37 654.66	134 195.86	203 260.38
Paid in advance	**177 114.69**	**77 955.74**	**449 114.46**	**704 184.89**
	43 526.35	228 068.89	209 152.24	480 747.48
Clearing Account	—	**6 750.00**	**19 296.40**	**26 046.40**
	—	8 086.33	122.72	8 209.05
Securities	**40 757 227.33**	**378 319.96**	**578 281.72**	**41 713 829.01**
	32 146 364.24	326 340.77	2 230 922.26	34 703 627.27
Cash in Bank	—	**19 402 973.43**	**8 103 157.39**	**27 506 130.82**
	825 061.44	17 141 598.80	5 090 088.99	23 056 749.23
Cash in hand	**2 007.65**	—	—	**2 007.65**
	761.35	—	—	761.35
Excess of Use of Funds over Inflow of Funds	—	**15 261.60**	—	**15 261.60**
	—	49 052.97	—	49 052.97
Total	**44 632 588.31**	**23 878 130.46**	**11 213 489.72**	**79 724 208.49**
	36 353 845.30	20 531 842.42	10 703 314.48	67 589 002.20

* New denomination of the former Reserve Fund, as recommended by the Finance Committee

Liabilities	General Budget	Scientific Programmes & Assoc. Committees	Special Budgets	Total
Capital Endowment	981 510.72 1 061 223.03	— —	— —	981 510.72 1 061 223.03
Working Capital *	3 912 802.18 3 842 510.87	— —	— —	3 912 802.18 3 842 510.87
Provision for Scientific Networks	2 238 015.91 —	— —	— —	2 238 015.91 —
Provision for EURESCO	1 950 000.00 1 800 000.00	— —	— —	1 950 000.00 1 800 000.00
Provision for Equipments/Works	296 423.29 64 327.78	— —	— —	296 423.29 64 327.78
Provision for doubtful debt	745 107.02 1 135 778.20	465 000.00 615 000.00	— —	1 210 107.20 1 750 778.20
Accounts payable	2 260 443.09 2 403 029.19	1 314 267.17 2 480 686.31	117 324.21 929 401.41	3 692 034.47 5 813 116.91
Collected or received in advance	3 637 018.30 2 369 651.30	240 000.00 460 000.00	9 563 637.45 5 697 104.72	13 440 655.75 8 526 756.02
Clearing Account	990 683.10 61 960.78	— 228 561.34	— 9 000.00	990 683.10 299 522.12
Provision for commitments	100 546.53 238 212.07	6 413 977.61 4 370 167.19	247 605.74 2 265 509.55	6 762 129.88 6 873 888.81
Cash owed to the bank	24 870 879.90 21 696 815.87	141 065.38 27 467.42	283 235.36 402 614.16	25 295 180.64 22 126 897.45
Excess of Inflow of Funds over Use of Funds	2 649 158.27 1 680 336.21	15 303 820.30 12 349 960.16	1 001 686.96 1 399 684.64	18 954 665.53 15 429 981.01
Total	44 632 588.31 36 353 845.30	23 878 130.46 20 531 842.42	11 213 489.72 10 703 314.48	79 724 208.49 67 589 002.20

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