INTERNATIONAL COLLABORATION

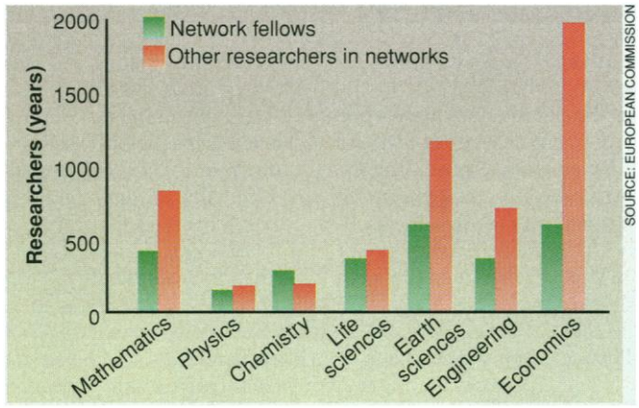
Euro Networks Aim to Train Postdocs, Build a Community

When a team of researchers in Austria gained worldwide attention last year for demonstrating the bizarre phenomenon called "quantum teleportation"—the apparent communication of the quantum state of a particle instantaneously across wide distances—Dik Bouwmeester, the lead author on the paper that appeared in *Nature*, was in the limelight. A young Dutch physicist, Bouwmeester was working in Anton Zeilinger's group at Innsbruck University as part of a novel European program that funds postdocs to work in international networks of labs. The excitement of the teleportation demonstration was a big plus, but, says Bouwmeester, "the most important aspect for me has been learning the techniques that have been developed over the years in Professor Zeilinger's group."

Bouwmeester is one of about 2000 postdocs supported by this unique European Union (EU)–funded program. All are working on research projects in countries other than their own as part of an effort to create a more cohesive scientific community in Europe. The program, which was expanded and upgraded about 2 years ago, will be coming up for renewal in the EU's fifth Framework program, the multibillion-dollar research effort set to begin next year. So, earlier this month, researchers involved in the program, their postdocs (known as network fellows), and senior figures in European science met in Graz, Austria, to assess the results so far. The consensus was that the networks are doing a good job and should continue with minor adjustments. But some fellows had concerns, particularly over how they would find a post back home after their fellowships are over.

The idea behind the program is simple: Groups of labs in different EU countries apply for EU support to form a network for a specific project; the EU subsidizes researchers to travel among the groups and funds each group in the network to employ one postdoc from another EU country. One goal is to give postdocs training as part of a pan-European team in the hope that they will stay in Europe and resist the lure of jobs in the United States. "The young researchers are the glue for transferring know-how. Their training adds value to ongoing research and helps develop a European critical mass in different subject areas," says Stelios Orphanoudakis of the Foundation for Research and Technology in Iráklion, Crete, who coordinates a network on vision-based robot navigation.

The EU has now set up 243 such networks, the longest running of which have been going for about 2 years—little more than halfway through their typical 3.5-year term. Each consists of between five and 12 teams situated in at least three countries, and the EU provides an average of $1.8 million to each network over its lifetime. It is by far the most expensive such program in Europe. The European Science Foundation (ESF) supports up to 24 networks at any one time, providing each with between $70,000 and $100,000 for 3 years to cover travel and communication costs. The COST program, which is supported by 28 European states, also provides small sums to coordinate programs funded by national research councils.



Linking up. The EU's research training networks are popular in fields with less tradition of collaboration.

The EU experimented with low-cost networks during the third Framework program, which ran from 1990 to 1994. But they were not a great success: The funding was enough to coordinate research efforts but insufficient for a true joint research project. "Some of these networks were little more than expensive travel clubs," says Peter Kind, head of the network unit at the European Commission. Rather than reduce the funding, the EU decided to increase it for the fourth Framework program and to add an extra ingredient: training. This new formula was instantly popular. When the EU asked for proposals in 1995, it received 1427, only 96 of which were funded. Despite the emphasis on training, the most important selection criterion is scientific excellence. "Good training requires first-class research," says Alfred Nordheim of the University of Tübingen in Germany, who coordinates a network on cell signaling in development and disease.

Many network fellows at the Graz meeting, including Bouwmeester, described the benefits of working in trans-European groups. Jane Scarrow, a British postdoc working at the University of Udine in Italy as part of a network studying the formation of the Ural mountains, valued getting a "view of how my specialist work addresses a scientific problem." The fellows did express concerns about making the jump back into research in their own country, however. "I would like to go back to an academic position in France, but that could be difficult," says Fabrice Wawak, a French postdoc working at the Polytechnic University of Madrid on a network to develop mobile robotics technology for use in health care. Several fellows called for some form of grants to returnees, but this was greeted skeptically by some older scientists who managed their careers without such help.

The network coordinators at Graz also pointed to real scientific benefits. "We had contacts before, though not real collaborations," says Nordheim. Anthony Watts of Oxford University, who coordinates a network on biological membrane biogenesis, says that "now plant and animal membrane biologists interact. The transfer of technology between the two wouldn't have happened otherwise."

Kind estimates that about 20% of basic research in EU countries is now networked through the EU, ESF, COST, and other programs. Indeed, some at the Graz meeting wondered whether that constitutes too much of a good thing. Too much cooperation, they suggested, could blunt researchers' competitive edge, while the training nature of the EU networks may bias the selection of projects against innovative and speculative research. Some suggested channeling a portion of the EU network funds through the ESF's more hands-off program. The ESF could use it to fund networks that are "nurseries for innovation," says chemist Dervilla Donnelly of University College Dublin, a member of the EU's senior scientific advisory body, ESTA, and ESF's executive council. Adds Alexandre Quintanilha, an ESTA member from the Institute of Molecular and Cellular Biology in Porto, Portugal, "Any system that can't set aside 5% to 10% of its funds to explore new directions can't evolve. If we don't do that, I think we are at risk."

–Judy Redfearn

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