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## 谁能科研管理双肩挑？“我就是其中之一！”

本网记者专访化学家、前美国国家科学理事会主席理查德·杰尔

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图片说明：美国科学院院士、前美国国家科学理事会主席理查德·杰尔

**【科学网 何姣报道】**在中国，既是官员又是科研大项目负责人的现象，并不少见，网上更是流传着各种关于项目所长、项目校长和项目局长的帖子，直接对这种科研与管理双肩挑的模式进行抨击。

无独有偶，美国国家环境健康科学研究所（NIEHS）所长大卫·施瓦兹既担任高级行政职务，又运作庞大的个人实验室。最近，施瓦兹因为从前雇主杜克大学聘请了过多的访问学者，触犯了美国联邦政府的伦理规范，而成为美国科研界的舆论焦点。美国国立卫生研究院已对其采取特别措施：在3个月内禁止施瓦兹涉足自己的实验室，并将实验室的12位访问研究人员送回杜克大学。

世界上真的没有人能够科研与管理双肩挑？

“我很荣幸地认为，我就是其中之一！”2007年9月，专程来北京参加诺奖论坛的沃尔夫化学奖得主理查德·杰尔教授，在接受本网记者专访时如此坦率地形容自己。

**“我就是其中之一！”**

现年68岁的杰尔是斯坦福大学化学系主任、美国科学院院士、美国艺术与科学学院院士，是世界上为数不多的在科学研究和科研管理两方面都做出一流成绩的科学家。

据杰尔介绍，NSB实际上是美国国家科学基金会(NSF)的一部分，并不是一个单独的机构。根据1950年的美国《国家科学基金会法案》规定，NSF的决策层由NSB和基金会主任组成。基金会主任负责基金会的日常工作，如组织项目申请和评选等，而NSB是NSF的决策部门。NSB与NSF主任密切合作，实现NSF的目标和职能，促进美国科学与工程领域的研究和教育工作。

除此以外，NSB还承担两项重要任务。第一，它负责监督NSF的运作，以保证NSF在美国总统和国会批准的政策框架中运行。也就是说，NSB要确定对于NSF的未来发展至关重要的问题有哪些，它还负责批准NSF的预算大纲，核准年度预算，批准各种新的项目计划和重要奖项，比如万尼瓦尔·布什奖和国家科学理事会卓越贡献奖，等等。NSB的第二个职能是以独立专家的身份接受美国总统和国会的咨询，提供各种与科学和工程研究及教育有关的专业信息，也就是说，NSB是总统和国会的智囊库之一。

NSB由24位委员组成，他们均由总统任命，参议院批准。另外，NSF主任会自动成为NSB的委员，参加NSB的各种会议。和NSF主任一样，这24个人的任期也是六年，每两年更新其中的三分之一。NSB的委员都是来自工业界和大学的杰出人士，其专业背景分布十分广泛，既有工程技术和基础研究领域的著名科学家，也有公共事务、教育和社会科学领域的专家学者。NSB每年举行六次会议，审议NSF的预算、奖项和项目，并且提出一系列科学政策分析项目。NSB的工作只是委员们的兼职工作，他们另外还有全职工作。

作为成功地兼顾了科研与行政的顶尖科学家，杰尔对和他身份类似的科学家有很多独到建议。他说，“任人唯亲”等偏袒现象确实需要大家时刻提高警惕，而且有的时候的确会出现公私利益冲突的现象。但是就他的经验来看，有些搞行政工作的人同时也能做出优秀的研究成果。他说：“我很荣幸地认为我就是其中之一。”

杰尔认为，如果出现公私利益冲突的情况，必须及时向公众公开，而且在处理这些个案的时候要特别小心谨慎，那么问题是可以得到解决的。因为说到底，这是一个追究责任问题，媒体也可以发挥舆论监督作用，帮助抵制滥用职权。

杰尔说：“我坚决反对一刀切，也就是禁止担任行政工作的科学家申请研究基金。其实科研行政官员如果知识丰富，而且活跃于科研一线，对他的行政工作也是很有帮助的。遗憾的是，我觉得在美国这样的人太少了。”

### 给NSFC找个竞争对手

“透明和公开是防治腐败的不二法门。关起门来、私下里达成的协议肯定有问题。”杰尔在谈到如何防治学术腐败时毫不犹豫地这样说。“不仅对于担任行政职务的科学家是这样，对于其他科学家也是这样。举例而言，在美国，如果教授为某个公司做咨询工作，或者自己开公司，就一定要让学校和研究组里的其他人都知道。如果教授有所隐瞒，那么一旦被学生发现，学生会有一种被剥削的感觉，这是不能接受的。”

透明与公开的原则也应当贯穿科研基金分配的整个过程。杰尔说：“每个国家在政府经费分配过程中都会产生一定程度的腐败现象。据我的观察，NSFC做得相当不错，在中国科学家中树立了良好的口碑。这主要是因为他们主要依赖外部评审专家们的意见，评审过程是公开、公平的。但是中国其

他地方做得就不一定这么好了，有些行政官员的权利太大，足以左右分配结果。结果很多项目申请是在走过场，只分配给了那些有关系的人。”杰尔认为，这对中国的短期和长远的科学发展都是极其有害的，所以NSFC的模式很值得中国其他部门效仿。另一方面，杰尔建议，中国也可以考虑建立一个与NSFC有竞争关系的基金分配机构，比如类似美国的国立卫生研究院。杰尔解释说，从表面看，这种竞争关系似乎会削弱NSFC的基金来源，但是其实恰恰相反，在更多的人联合呼吁和劝说下，国家会更重视对科研的投入，所以NSFC和这个新机构的理想关系是即竞争又合作的。

在谈到学术不端行为的根源时，杰尔介绍说，美国NSF设了一个叫做总监察长（General Inspector）的职位，专门处理这类问题。他直接向国家科学理事会报告工作，而不是基金委主任。杰尔说，总监察长办公室这个部门并不是NSF的独创，实际上，美国的所有国家机关都有这么一个部门，职责就是确保联邦基金没有被滥用。同时，国家科学理事会下面还设了一个审计与检查委员会（Audit and Oversight Committee），负责监察总监察长办公室，杰尔曾经担任该委员会主席。杰尔说：“人就是人，是人就有弱点。”只有完善的机制才能限制人的弱点。杰尔坦言：“实际上，美国科学圈子也发生过很多不光彩的事情。我曾经担任过的审计与监督委员会主席好几年，碰到过不少这样的例子。比如说，项目评审人剽窃了申请人的想法，还比如拿科研经费去度假。”杰尔说：“我不知道NSFC是否也有类似的机制，如果没有，我建议考虑成立。”

### “放手让科学家们去玩”

在谈到中国科学家们正在热议的《科学技术进步法》修订草案中关于宽容失败的条款时，杰尔说，其实这个争议很容易理清：“问题的根源还是在于基金分配是否公开、公正，经费是否真的分配给了最具有竞争力的研究团队。如果是，那么并不存在是否应该宽容失败的问题。”

在杰尔看来，科学研究活动是时时刻刻伴随着失败的，高回报的原始创新项目必定冒着极大失败风险。2005年杰尔在法国图卢兹的保罗·萨巴蒂埃大学接受名誉博士学位的仪式上就发表了题为《失败的价值》的著名演讲。杰尔指出：“创新性的研究是无数次失败和极少几次成功的混合。真正的研究乃是一部由错误组成的喜剧，其中错误的事情一件接着一件发生。不妨用丘吉尔的话来说，研究进展其实是怀着永不衰减的热情，在一个接着另一个失败的道路上蹒跚前行。倘若研究真正具有创新性，那么关于什么将会发生或将被发现，事先实在是没有多少可以预测的。创新性研究并非在某种表格上填充空白，或者在已经很好地确立的知识边界上作些拓广而已。当然这类活动也有它自己的地位，不过我不称它为创新性的。”

杰尔说，随着中国的国力不断增强和对科研的投入不断加大，中国科学家在国际学术期刊上发表的论文数量也在突飞猛进，然而，真正造成广泛影响的论文数量的增长与论文总量的增长并不匹配，中国的原始创新能力仍然有待提高。

杰尔说，根据他的经验，各种专家委员会比科学家个体更不愿意承担风险，如果完全依靠投票，获得通过的就只是那些很可能或者一定会成功的项目，然而科学发展的历史告诉我们，只有冒一定的风险科学才能取得飞跃性的进展。

那么如何促进原始创新呢？杰尔带着他招牌式的微笑说：“放手让科学家们去玩，就像孩子一样。我在日本的时候也常常被问到这个问题，每次我这样回答，他们都说，‘别开玩笑，说正经的。’可是我说的就是正经的，让科学家们去玩，去自由地探索这个奇妙的世界，凭兴趣决定自己的研究方向，不要给他们太多的命题作文。很多看起来没有用的研究，比如说天文学，终将给这个世界带来翻天覆地的变化。”

## 更多阅读

### 理查德·杰尔 简介

作为世界物理化学和分析化学的领军人物，杰尔是最早采用激光研究化学反应取得成就的科学家之一，近年来他在超微量分析化学方面又取得了巨大成功。他的研究促使分析化学成为一门精密的科学。杰尔教授独自或与他人合作发表过700多篇论文，撰写了4本专著，并拥有50多项专利。

杰尔教授1939年出生于美国俄亥俄州的克里夫兰市，1961年获得哈佛大学化学和物理学学士学位，1964年获得哈佛大学化学物理学博士学位。他的一生获奖无数，特别是在2005年荣获沃尔夫化学奖。沃尔夫奖是世界上具有很高学术声望的多学科国际大奖。1976年由以色列议会设立，1978年首次颁奖，共设有数学、物理、化学、医学、农业和艺术六大类。华人科学家吴健雄、陈省身、袁隆平都曾经荣获该奖。

然而杰尔的影响绝不仅仅限于学术界。精力过人、“人脉”很旺的杰尔曾经担任多种科研行政职务，其中1992年至1998年任美国国家科学理事会(NSB)委员，1996年至1998年任理事会主席，并在任职期间率团访问了中国的自然科学基金委(NSFC)。1997年至2000年杰尔担任了美国总统国家科学奖评选委员会主席。因为他对美国科学研究管理的巨大贡献，1998杰尔获美国国家科学理事会卓越贡献奖。

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**WHO IS ABLE TO DO BOTH RESEARCH AND  
ADMINISTRATION AT THE SAME TIME? “I AM ONE OF  
THEM!”**

**Reporter of SCIENCENET Interviewed Richard Zare, Chemist, Former Chair of National Board of Science of the USA**



Figure Caption: Richard Zare, Member of National Academy of Science of the USA, Former Chair of National Board of Science of the USA

**[SCIENCENET Reported by Jiao He]** In China, it is not rare to have someone serve as a government officer as well as a principle investigator of large research projects. There are all kinds of comments on the internet that directly rebuke this mode of doing both research and administration.

This situation is not unique, but has some counterpart. David Schwartz, the head of National Institute of Environmental and Health Science (NIEHS) of the US, was serving as a high-level administrative officer as well as managing his huge research laboratory. But not long ago, he became the focus of the media in the circle of scientific researchers, because he touched the line of ethical regulations of the US federal government by hiring too many visiting scholars from his former employer Duke University. The NIH has taken measures on him: Schwartz was prohibited to enter his own lab for three months, and demanded to send the 12 visiting researchers in his lab back to Duke University.

Isn't there anyone in the world who can do both research and administration?

“I am honored to consider myself to be one of them!” Professor Richard Zare, the Wolfe Prize Laureate who came to Beijing for the Nobel Laureate Forum, frankly described himself during my interview in September 2007.

## **“I AM ONE OF THEM!”**

Professor Zare, at the age of 68, is the Chair of Department of Chemistry at Stanford University, a member of National Academy of Science in the USA, and a member of Academy of Arts and Science in the USA. He is one of a few scientists who have remarkable achievements in both scientific research and administration.

As Professor Zare depicted, National Science Board (NSB) is actually a part of National Science Foundation (NSF) in the US, not an independent agency. In conformity with the Act of National Science Foundation passed in 1950, the administrative circle of NSF is composed of NSB and the Chair of NSF. The Chair of NSF is in charge of the daily work of NSF, such as organizing the project applications and evaluations, while NSB is the division which makes decisions about NSF. NSB works closely with the Chair of NSF to fulfill the goal and the service of NSF, which is promoting the research and education in the field of science and engineering in the US.

Other than that, NSB has two important tasks. First, it monitors the operations of NSF to ensure that NSF is running within the policy frame ratified by the president and the Congress of the US. That is, NSB needs to determine what the crucial problems are for future developments. It also takes charge of approving budgets of NSF, reaffirming annual budgets, ratifying new project proposals and important awards such as Vannevar Bush Medal and the Distinguished Service Award of NSF, etc. The second task of NSB is serving as independent consultants for the US president and the Congress. They provide specialized information in various fields of scientific and engineering research, as well as education; that is, NSB is one of the think tanks for the president and the Congress.

NSB consists of 24 committee members, all appointed by the president and approved by the Senate. The Chair of NSF automatically becomes the committee member and participates in NSB meetings. The same as the Chair of NSF, the term of the 24 committee members is also 6 years and the committee is replaced by one-third in every two years. All NSB members are the outstanding persons from industry and universities, with broad background of knowledge; they include famous scientists in engineering and fundamental research, and also experts in public affairs, education and social science. NSB holds six meetings every year to consider the budget of NSF, awards and projects, and to give a series of schemes for scientific policy analysis. Working in NSB is only a part-time position for the members, and they have other full-time positions as well.

As a top scientist who has succeeded in balancing both scientific research and administration, Zare has many unique suggestions for the scientists who are in similar situations. He told, we do need to keep alert to the problems such as “cronyism”, and sometimes personal and public interests conflict with each other. But from his experience, some administrative people also have excellent research achievements at the same time. He said, “I am honored to consider myself to be one of them.”

Zare thinks that, when the personal and public interests have conflicts, one must publicize the situation in time and be very careful when handling such cases; then the problems can be solved, because the bottom line is a problem of responsibility. The media can play their role of supervision and help prevent the abuse of power.

Zare said: “I resolutely oppose the way of being across-the-board, which is prohibiting the scientists in administration to apply for research funding. In fact, being knowledgeable and active in scientific research is very helpful for one’s administrative work. Unfortunately, I feel that there are too few such people in the US.”

### **FIND A COMPETITOR FOR NSFC**

“Being transparent and open is the best way to prevent corruption. Contracts behind door must have problems.” Zare said without hesitation when talking about how to prevent academic corruptions. “This is not only for the scientist in administration, but also the same for other scientists. For example, in the US, if a professor is doing consulting for a company or starts a business, he must let the university and all the people in his research lab know. If the professor hides things and is found by the students, the students will feel being exploited. This is unacceptable.”

The principle of transparency and openness should also be throughout the whole process of research funding allocation. Zare said: “To some extent, corruption happens to the government funding allocation in every country. To my observation, NSFC has done very well and has a good reputation among the Chinese scientists. It is mainly because they rely on the review opinions from outside experts and the reviewing process is open and fair. But China may not do the same well in other places; some administrative officers have too much power to influence the distribution. As a result, many project applications are just a show, and the funding is only given to those who have connections.” Zare feels that it is very harmful to China’s short-term and long-term development of science. Thus the way of NSFC is a great model for other departments in China to learn. Moreover, Zare suggested that China could set up another funding-allocation agency to compete with NSFC, similar to NIH in the US. Zare explained, on surface, such competition seemed to decrease the funding source of NSFC, but the truth was the opposite. In a joint appeal and lobbying by more people, the government will pay more attention to investing scientific research. Thus, the ideal relation between NSFC and this new agency is both competitive and cooperative.

When talking about the origin of academic misconduct, Zare mentioned, NSF in the US established a position called General Inspector to specifically handle such problems. He directly reports to the NSB instead of the Chair of NSF. Zare said that General Inspector Office is not original to NSF; in fact, all the governmental departments in the US have such offices, whose duty is to ensure that federal funds are not abused. At the same time, the NSB also established an Audit and Oversight Committee, whose duty is inspecting the General Inspector Office. Zare once served as the chair of this committee. Zare said: “people are humans, and humans all have weaknesses.” Only a sound mechanism can restrict people’s weaknesses. Zare stated: “Actually, there were many unpleasant affairs happened in the circle of American scientists. I was the Chair of the Audit and Oversight Committee for a few years and encountered a number of such cases. For example, proposal referees plagiarize the ideas of the applicants, or the research funds are spent on vacation.” Zare said: “I do not know whether there is such a mechanism in NSFC; if not, I suggest to establish one.”

### **“ALLOW SCIENTISTS TO PLAY”**

When talking about the term of tolerance to failures in the amendment of the Law of Science and Technology Development which is widely debated among Chinese scientists, Zare said, this

argument was actually easy to settle. “The origin of the problem is still whether the funding is distributed in an open and fair way, whether the funding is really given to the most competitive research groups. If yes, then there will not be such a question of whether failure should be tolerated.”

In his eyes, scientific research activities are always accompanied with failures; high-rewarding original projects inevitably have more risk of failure. In 2005, when receiving his honorary Doctoral degree in University of Paul Sabatier at Toulouse of France, Zare delivered a famous speech titled “the Virtue of Failure”. He pointed out: “Innovative research is a mix of many failures and very few successes. Real research is a comedy of errors in which one thing goes wrong after another. To paraphrase Winston Churchill, research progress consists of staggering from one failure to the next with undiminished enthusiasm. If research is truly innovative, then little can be predicted ahead of time about what will happen and what will be found out. Innovative research is not an activity of filling in the blanks in some form or extending the boundaries of well-established knowledge. Such activity also has its place, but I do not call it innovative.”

Zare said, along with the enhancement of China’s national strength and increase of investment in scientific research, the number of papers in international academic journals published by Chinese scientists increased rapidly. However, the increase of those with wide impacts is not proportional to the total number. China’s innovation capability still needs to be enhanced.

Zare also said, according to his experience, committees composed of experts are less likely to take responsibility than individual scientists. If decisions are totally made by vote, those will be passed are only the projects that are probably or certainly going to work. But the history of science development tells us: critical breakthroughs in science are only achieved by taking certain risks.

Then how to promote innovation? With smile, he said: “Allow scientists to play, treat them like kids. I was often asked this question when I was in Japan. Each time I answered in this way. They all said: ‘No joking. Please be serious.’ But I was seriously speaking. Just allow scientists to play, to explore this wonderful world freely. Let them decide their own research direction by their interests and do not preset their tasks. Many “useless” researches, such as astronomy, will finally bring the world dramatic changes.”

## **MORE TO READ**

### **BRIEF INTRODUCTION OF RICHARD ZARE**

As a leading scientist in physical and analytical chemistry in the world, Zare is one of the first successful scientists in utilizing laser to investigate chemical reactions. In recent years he achieved great success in ultra-micro analytical chemistry. His research helps analytical chemistry become precise science. Professor Zare has published more than 700 papers by his own or co-authored with other people. He also wrote 4 books, and has more than 50 patents.

Professor Zare was born in 1939, in Cleveland, Ohio, USA. In 1961, he got his bachelor’s degree in chemistry and physics from Harvard University and Ph. D. degree in chemical physics from Harvard University in 1964. He attained numerous awards, among which the Wolf Prize in chemistry he won in 2005 is very special. Wolf Prize is one of the most prestigious international awards for multiple scientific fields. It was established by the Israeli Congress in 1976 with the first award given in 1978. It has six categories: mathematics, physics, chemistry, medicine, agriculture and art. Chinese scientists Jianxiong Wu, Xingshen Chen and Longping Yuan all earned this award.

However, Zare's influence is absolutely not limited in the academic field. Having social networks, Zare was appointed many positions for administrating scientific research. He served as a member of NSB from 1992 to 1998, and the Chair of NSB from 1996 to 1998, during which he led a delegate to visit NSFC. From 1997 to 2000 Zare was the Chair of Committee of President National Science Award. Because of his great contribution to the administration of scientific research in the US, Zare was awarded Distinguished Contribution Award of NSB in 1998.