

A DISCUSSION ON INSTITUTIONAL RESEARCH FOR A TRANSITIONAL CUBA

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It is generally accepted that research, in all of its diverse modalities, is an excellent indicator of the socioeconomic level of a nation, as well as of its future direction. It is also evident that, since research is deeply rooted in the society in which it is engrained, it also reflects its values and *modus operandi*. As Cuba will surely experiment, some time in the future, substantive changes in its social and political framework (a transition to pluralism), it is important to take a serious look at this important facet of its intellectual life. Hence, we proceed within our now established line of work at previous ASCE meetings (Romeu 1995, 1998, 1999). We examine the history and the existing modes of institutional research in Cuba and present some ideas on how this needs to evolve, once a transition to pluralism occurs in the country, in order to maintain its current levels in an open society.

We analyze Cuban research currently carried out in institutions, academia and government. We believe that the problems and needs for reforming such research activity, after the transition, are not very different from those we have already signaled in our paper on reforming the (higher) education system (Romeu 1998). The causes, and the consequences, of both of these intellectual activities remain the same under the current Cuban political system.

As in our previous work, we propose here some specific courses of actions. These proposals are part of the ongoing dialogue that ASCE maintains regarding Cuba's future. Unfortunately, in this important debate, Cubans inside the island, prevented by Castro's government, can barely participate. We are all very much aware of this problem. Hence, we want to underline, right from the outset, that our conclusions and recommendations are only intended to enrich this truncated dialogue on Cuba's future—and never to impose our point of view on our colleagues inside Cuba. We welcome dialogue, which is one of the main ingredients of society; one that Cuba has thoroughly missed during these last forty two years of history and that is at the root of all of its current problems. We long for the participation of our now silenced brothers. But it will eventually come. And, at that time, all our contributions will be available in the ASCE proceedings.

In the remaining of this paper we provide some topical background and context by discussing different research models and by giving some examples of their applications in different countries. We then give an overview of the history of Cuban research until the present days. Next we compare the current Cuban research model with that of a well-known organization in an open society, the American Statistical Association (ASA), pointing out advantages and disad-

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vantages. We finally propose specific actions for organizing and adapting the current Cuban research model for the pluralistic and open society toward which Cuba will transition.

RESEARCH ACTIVITY AND ITS MODELS

Research, sometimes also called “scholarship” in academic circles, is the set of activities that leads to new discovery, or to the expansion of the existing knowledge base. Following Boyer (1990), we consider four types of research or scholarship: discovery, application, synthesis and teaching (Chamberlain 1993).

Scholarship of discovery, also known as “basic research,” leads to the development of new principles, new methods, theories, etc. It is the most conceptual type and usually takes place in isolated labs or cubicles, in the heart of the “ivory tower.” It is also extremely important because it is the basis of all new developments. One example is the invention of the transistor, in Bell Labs.

Scholarship of application, also known as “applied research,” takes the findings of basic research, finds purpose for it, refines it and turns it into practical applications that we can all use: The development of TVs, radios, computers, and so on, using the transistor, constitute some examples.

Scholarship of synthesis produces quality reviews of past work, integration of research results from various disciplines, technology transfer, etc. It takes pure and applied research results and puts them in a broader perspective, weaves them together and converts them into multidisciplinary topics. It is usually undertaken in academic institutions and in “think tanks.”

Scholarship of teaching, which is less recognized and glamorous than the three previous ones but not less important, occurs in undergraduate classrooms and consists in preparing future generations of researchers, by including them in inquiries of small—but important—topics. The consequences of caterpillar migrations on certain plants, or of the application of technology to the learning of statistics, are some examples of this type of research (Burke 1986).

In addition to these four types of research, we have different models of research structure, what may be called the decentralized, centralized, mixed and anarchic models.

The **decentralized** model is prevalent in the United States and other highly developed countries. Research of the four above-mentioned types is undertaken by all sorts of institutions: private, public, commercial, non-profit. At the university, faculty is required to undertake research as part of their obligations and hence become part-time researchers. Full-time researchers work at independent (e.g., RAND), industrial (e.g., DuPont) and government labs, both military (e.g., Air Force Research Laboratory) and civil (e.g., Oak Ridge). There is no direct government control. However, oversight and direction is provided through certain official organizations (the National Science Foundation or the Academy of Sciences) and mechanisms (government grants, amounting to US\$75 Billion, invested annually in all sorts of research activity). In addition, independent research is also supported by grants from private foundations and professional organizations.

The **centralized** model existed in the former USSR and other socialist countries and in Cuba. Research here is directly and openly managed and supported by the State. Government labs and research organizations hire, fire, promote and transfer all research personnel. They select research topics and evaluate and disseminate their results. Instead of open competition for grant money, that fosters ingenuity, universities and research centers depend on government subsidies and budgets. This also constitutes a form of patronage that disincentives innovation and reduces independence.

The **mixed model**, a combination of the two above-described ones, fosters cohabitation of both state and private research in nations with strong, but democratic central governments. France has the Centre National pour la Recherche Scientifique (CNRS) and Mexico the Consejo Nacional de Ciencia y Tecnología (CONACyT), institutions that carry out or advance the official research policy. But there also exist many private research centers, in industry and

academe, which prosper and work independently of any government supervision or interference.

Finally, there is what we will call the **anarchic** model, prevalent in underdeveloped countries. There, little research is undertaken. And whatever research is done, by a small group of pioneers, is conducted in universities, stations, primitive labs and research facilities, with little if any support or recognition and with meager budgets. Many Latin American countries fall within this latter category.

This author considers that research in Cuba, before 1959, followed the anarchic model. It was, in most part, research of the applications, synthesis and teaching types, with few exceptions of scholarship of discovery, and mostly done in government agricultural stations and at the university. After 1959, by paying a huge social, political and economic price, this model changed to a centralized one and basic research grew considerably, especially in certain areas such as biotechnology.

HISTORY OF CUBAN RESEARCH

The origins of Cuban research activities are closely linked to two institutions: the University of Havana (1728) and the Sociedad Económica de Amigos del País (Santiago, 1788; Havana, 1792). The Cuban Academy of Sciences came later (1861) as the result of the work of researchers from these two institutions, especially of Cuban physician Dr. Tomas Romay (“La Academia” 1996; *La Enciclopedia*, 1974).² Since little can be learned in isolation, in the next paragraphs we compare the history of the development of research in Cuba and in the United States and, in particular, the history of the U.S. and Cuban Academies of Sciences (CAS) and their related institutions.

Harvard, the first U.S. university, was founded in 1636. In the XVIII Century, intellectuals such as Franklin, in the United States, and Arango, Poey and Romay, in Cuba, undertook research on their own.

The first U.S. scientific institution, comparable to the Cuban Sociedad Económica, was the American Association for the Advancement of Science (AAAS), founded in 1848.³ The U.S. National Academy of Sciences (NAS) was founded in 1863, during (and to help in the effort of) the Civil War.⁴ All these Cuban and U.S. scientific societies languished throughout the second half of the XIX Century. Their main contributions consisted in periodically gathering the best scientific minds and encouraging and publishing the first research papers discussing national issues of scientific interest.

At the onset of the XX Century these scientific institutions in both countries lost many of their members to the professional societies that they encouraged and had helped create. In Cuba, relevant scientists such as Drs. Finlay, Albarrán and de la Torre were members of the CAS. Their research was a “tour de force” while, in the United States, their counterparts enjoyed industry’s research resources. But NAS, AAAS and CAS functioned more as clubs, where researchers met and exchanged information, than as sponsoring or coordinating organizations. Their time for such proactive roles had not arrived.

In the second half of the XX Century, as a result of World War II in the United States and of the 1959 revolution in Cuba, things changed. Both Academy of Sciences acquired proactive roles in encouraging, sponsoring, directing or reviewing research, either directly (Cuba) or through their government links (e.g. through the National Research Council, created by NAS in 1916, to help advance scientific research during the war and later the National Science Foundation). In a decentralized way in the United States, and in a centralized one in Cuba, a national scientific policy was finally initiated and directed, using the Academy of Sciences and their network of scientific organizations.

After 1959, CAS became an active instrument of the government scientific policy. It received substantial

2. Academia de Ciencias de Cuba, <http://www2.cuba.cu>.

3. American Society for the Advancement of Science, <http://www.aaas.org>.

4. National Academy of Sciences, <http://www.nas.edu>.

subsidies and created numerous Institutes where government sponsored research was undertaken. CAS became a de facto government agency. In 1976, CAS was established as a National Institute and, in 1980, its Director held ministerial rank. At this time, CAS literally managed all scientific and technical research in Cuba. In 1996, CAS was restructured and started becoming again an honorary and scientific institution (rather than a government agency). After 1998, CAS is again coordinating all university and other institutional Cuban research, which was its original function. It also holds the official function of representing all Cuban research organizations abroad.

The best way to illustrate the extent of the organization and functions of the CAS is to present a partial list of all the institutes that CAS directs and, to a point, controls (see Appendix 1). We can see how most science and humanities areas are included in the CAS list of organizations. But the consequences of having such high degree of control on the entire research activity is far reaching. Cuba is a country where over 90% of the population is employed by the state (including those working for CAS organizations). In addition, the media and all levels of education are under government control and ownership. There is only one legal political party with a strong hierarchical organization, with President Castro and his brother on the top. Under this configuration, the current structure of CAS can only strengthen the country's concentration of personal power.

For comparison, we present the organizational structure of an alternative research model: the American Statistical Association (ASA), an open U.S. professional society with 15,000 members worldwide, founded in the 1850s. ASA operates on a voluntary basis, and is run by unpaid officers elected through secret ballot, who serve fixed terms providing leadership and offering professional growth to all ASA members. A list of ASA Committees is presented in Appendix 2.

The ASA recruits its officers from within its members, through annual elections. Its officers do not de-

pend economically on the ASA or the U.S. government.⁵ CAS meanwhile selects its officers by following (as with everything else in Cuba) a highly politicized process. These officers become state employees and remain as such for an undetermined period of time (as opposed to fixed terms). High level officers of CAS receive special privileges, not available to the average Cuban researchers — let alone Cuban citizens. These include travelling abroad, attending official functions for foreign researchers, and the use of cars, computers and other modern devices. It is not unreasonable to suggest that fear of losing such special government privileges plays an important role in these CAS officers' decisions.

ADVANTAGES AND DISADVANTAGES

In the previous section we described several research models and structures. Each combination model-structure has advantages and disadvantages. They function and serve the society in which they are inserted. Advantages and disadvantages are, therefore, subjective. In an effort to overcome this difficulty we call "general" those characteristics for which a consensus assessment is reached by a large number of researchers. For example, many researchers will agree that the anarchic model of research is the least efficient of all, for very little research of importance is able to come out from such poorly endowed and supported model at a very high human cost.

More difficult is to agree on the comparative merits of the other three models. For example, centralized models provide researchers with support, recognition and economic stability, which is lacking under the anarchic mode, as long as their government sponsors are happy with their work and personal behavior. But research topics and results (as well as personal researchers' activities) should advance — or at least not harm — the government goals. Does this make it a better or worse model?

To a certain point, the same could be said of any other research model. For example, we have recently found out that substantial adverse research results were suppressed by the tobacco industry in the Unit-

5. American Statistical Association, <http://www.amstat.org>.

ed States. But in an open, civil society it is more likely that objectivity finally prevails. In addition, in such a system, researchers can move from one research environment to another if they disagree with their politics or if their interests are not advanced, much more easily than in a closed society, like Cuba's. Finally, there are more "donors" (foundations) both private and public (Ford, Rockefeller, NSF, NIH, etc.). The likelihood of finding alternative sponsors is larger in an open, civil society than in a one-party, state-controlled society.

Hence, we will propose several research-related problems where, *in abstracto*, the specific research model selected plays a decisive role. These include having the opportunity to work on specific research problems, obtain support to undertake one's proposed research, assemble the qualified research team, secure the host lab or institution and find an adequate scientific forum to disseminate and verify one's research results. The manner in which all these research issues are resolved is highly dependent on the research model under which research operates.

We will illustrate the situation with a recent real example. In Cuba, four independent, up to then unknown colleagues, wrote a research paper on Cuban socioeconomic problems titled *The Fatherland Belongs to All*. We all know their names, for the four have been made honorary members of ASCE. Their research paper discussed and documented important aspects of the recent history of our country. When these four researchers were ready to release their paper, they were arrested, tried, and sentenced to several years in jail. After much international protest, three of them were released on parole. The fourth one, Mr. Vladimiro Roca, is still in prison.

Without reaching the above example extremes, the average Cuban researcher faces a level of scrutiny (on his research topic, research associates, results) way above that of his peers almost everywhere in the pluralistic world. We know of the high levels that Cuban scientific research has reached in some areas such as biotechnology. We can only conjecture the levels it could have reached, were Cuba an open society where anyone — independent of political ideology,

religion, etc. — were provided an opportunity to do research, or to acquire the knowledge to do research.

In addition to the major issues illustrated above, there are also several other problems. They include the lack of access to specialized and advanced training, to current publications, to research resources (labs, computers, libraries, internet), to technical research assistance, to exposure to foreign researchers and to their interaction. In a centralized model such as Cuba, access to these resources is conditioned on the researcher's government allegiance.

A centralized system nurtures government "patronage." Researchers who are committed to the government are likely to advance faster — and those who are not, can be penalized and held back. Thus, the centralized model advances the current goals of Cuban society, because it is a closed, government controlled one. As it opens up, via a transition to pluralism, the centralized model will become useless and obsolete and will have to change to one where research results and knowledge (and not allegiance to the government) constitute the criteria for recognition, reward and support.

PROPOSAL FOR FUTURE CUBAN INSTITUTIONAL RESEARCH

There is a common theme between institutional research and Cuban education. In our earlier papers (Romeu 1998 and 1999) we talked about modifying the educational system that already exists, so it can work in the new Cuban society, instead of "throwing out the baby with the bath water." The fundamental disease of the current Cuban society is its asphyxiating state control and patronage. As Cuba transitions to an open society, there will be neither room for nor need for the existing CAS control and patronage mechanisms. The real control of all elements of society, including the education and research activities, will logically pass on to the "civil society."

Hence, we propose three measures for the organization and support of all research activities. With the transition process, Cuba will move from a statist, pyramidal, highly controlled society into a pluralistic and decentralized one. And CAS should become, accordingly, a director and a catalyst for research.

These three measures are important to prevent Cuba from going back to the pre-1959 “anarchic research” model while, at the same time, moving out of the centralized one. Cuban society will have to select between the mixed and the decentralized research models to determine which model will suit it best. The three measures are:

- All research should be developed and directed through open processes. CAS officers should be either directly elected or at least scrutinized by peer professional organizations and publicly elected authorities. The new role of the CAS should not be to control research but to stimulate and evaluate it, through open and efficient professional organizations, as it occurs in open societies. Through such open process, the type of research work to encourage and support should be selected, based on the experiences and successes of the past and on the economic possibilities that such research can bring to the Cuban economy and nation.
- There must exist funds to support research activities and they should come from those who benefit mostly from it: Cuban society as a whole. The funds may include contributions from private foundations as well as contributions (through taxes and government spending) from the industrial and agricultural sectors. The main problems of the pre-1959 anarchic model were lack of funds and of organization to support research. After 1959, this lack of research support was traded-off for lack of freedoms and economic discrimination. We want to improve on the current Cuban situation by opening the research activity to all — not just to substitute one form of

discrimination by another. This can't be achieved if there is lack of adequate economic resources for education and research.

- There are currently many honest and well-prepared officers and researchers working in Cuban research institutions and the CAS. They have acquired valuable experience that can continue to serve Cuban science and technology. It is not difficult to differentiate a true scientist (or academician or researcher) from an *apparatchik* (the case of Mrs. Ceaucescu in Romania, is a recent classical example). Careful evaluation of professional dossiers is in order to accomplish this task.

CONCLUSIONS

Traditionally, drastic political changes in Cuba (e.g., the revolutions of 1933 and 1959) have replaced entire rosters of people from the previous administration by new and often inexperienced ones, without doing any evaluation. The principle was: every person who worked with the previous administration had “collaborated,” was guilty by association and should go. This approach disrupted the continuity in the processes of our nation's life. It also created a false sentiment of social “advancement” and a belief that only through revolution, could the younger generations find a place at the “banquet table.” Such inefficient remedy only transitorily resolved Cuba's chronic problems of unemployment and lack of social mobility, without attacking its root causes. It is important to avoid such costly approach in the future. When the transition takes hold and political change occurs in Cuba, we propose to salvage the good, modify the questionable, discard the bad, and move on with the business of rebuilding our nation in peace.

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APPENDIX 1

Instituciones Aceptadas Como Auspiciadoras de la Academia de Ciencias de Cuba

1. Universidad de la Habana
2. Centro de Ingeniería Genética y Biotecnología
3. Instituto de Medicina Tropical "Pedro Kouri"
4. Instituto de Investigaciones del Transporte
5. Instituto de Historia de Cuba
6. Instituto de Investigaciones Hortícolas "Liliana Dimitrova"
7. Instituto Nacional de Angiología y Cirugía Vascular
8. Instituto de Hematología E Inmunología
9. Instituto de Ecología y Sistemática
10. Instituto Superior Politécnico "José A. Echevarría"
11. Instituto Nacional de Oncología y Radiobiología
12. Centro de Investigaciones Pesqueras
13. Centro de Investigaciones de la Economía Mundial
14. Instituto Nacional de Higiene, Epidemiología y Microbiología
15. Centro Internacional de Restauración Neurológica
16. Instituto de Investigaciones de Cítricos
17. Instituto de Investigaciones para la Industria Alimenticia
18. Instituto Cubano de Investigaciones de los Derivados de la Caña de Azúcar
19. Centro de Investigaciones del Petróleo
20. Centro de Estudios de Historia de la Ciencia y la Tecnología
21. Estación Experimental de Pastos "Indio Hatuey"
22. Centro de Investigaciones Psicológicas y Sociológicas
23. Centro Nacional de Sanidad Agropecuaria
24. Instituto de Geografía Tropical
25. Hospital Psiquiátrico de la Habana
26. Instituto de Investigaciones del Arroz
27. Universidad de Matanzas
28. Instituto Superior de Ciencias Agropecuarias de la Habana
29. Centro Nacional de Investigaciones Científicas
30. Centro de Inmunología Molecular
31. Instituto de Matemática Cibernética y Física
32. Instituto de Meteorología
33. Instituto de Investigaciones Fundamentales en Agricultura Tropical
34. Universidad de Pinar Del Río
35. Instituto de Geología y Paleontología
36. Instituto Cubano de Investigaciones Azucareras
37. Instituto de Investigaciones de Metrología
38. Instituto de Investigaciones Avícolas
39. Instituto de Investigaciones Forestales
40. Instituto Central de Ciencias Pedagógicas
41. Centro de Desarrollo de Equipos E Instrumentos Científicos
42. Instituto de Investigaciones Porcinas
43. Centro de Antropología
44. Instituto Central de Investigación Digital
45. Centro de Investigaciones Metalúrgicas
46. Instituto de Filosofía
47. Hospital "Frank País"
48. Instituto de Neurología y Neurocirugía
49. U.i.p. de la Celulosa Del Bagazo "Cuba 9"
50. Instituto de Literatura y Lingüística
51. Centro de Investigaciones para la Industria Minero-metalúrgica
52. Instituto de Investigaciones Económicas
53. Instituto Nacional de Endocrinología
54. Instituto de Materiales y Reactivos de la Universidad de la Habana
55. Instituto de Investigaciones en Viandas Tropicales

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| 56. Instituto Nacional de Investigaciones de la Caña de Azúcar | 80. Instituto Superior Pedagógico “Frank País García” |
| 57. Instituto Nacional de Ciencia Agrícola | 81. Centro de Investigaciones Hidráulicas Del Ispjae |
| 58. Instituto de Investigaciones de Sanidad Vegetal | 82. Jardín Botánico Nacional |
| 59. Instituto de Geofísica y Astronomía | 83. Consejo Científico de las Fuerzas Armadas Revolucionarias |
| 60. Universidad de Oriente | 84. Instituto de Nefrología |
| 61. Universidad Central de las Villas | 85. Instituto Técnico Militar |
| 62. Hospital Clínico-quirúrgico “Hermanos Ameijeiras” | 86. Academia de las Fuerzas Armadas Revolucionarias |
| 63. Instituto de Cardiología y Cirugía Cardiovascular | 87. Sociedad Cubana de Química |
| 64. Centro de Investigaciones Científicas de la Defensa Civil “Labori “ | 88. Asociación de Pedagogos de Cuba |
| 65. Sociedad Económica de Amigos Del País | 89. Sociedad Meteorológica de Cuba |
| 66. Sociedad Cubana de Historia de la Ciencia y la Tecnología | 90. Sociedad Cubana para la Promoción de las Fuentes Renovables de Energía |
| 67. Centro de Química Farmacéutica | 91. Sociedad Cubana de Geografía |
| 68. Instituto de Ciencia Animal | 92. Sociedad Espeleológica de Cuba |
| 69. Centro Técnico para el Desarrollo de los Materiales de Construcción | 93. Archivo Nacional de Cuba |
| 70. Centro de Investigaciones Marinas de la Universidad de la Habana | 94. Consejo Asesor Provincial de Ciencia y Tecnica de Villa Clara |
| 71. Centro de Estudios Demográficos de la Universidad de la Habana | 95. Consejo Asesor Provincial de Ciencia y Tecnica de Pinar del Rio |
| 72. Centro de Bioplantas de la Universidad de Ciego de Ávila | 96. Centro de Investigación y Desarrollo de la Cultura Juan Marinello |
| 73. Instituto Superior Pedagógico “Juan Marinello” | 97. Instituto de Nutrición E Higiene de los Alimentos |
| 74. Centro de Investigación para el Mejoramiento Animal (Cima) | 98. Instituto Superior de Ciencias y Tecnología Nucleares |
| 75. Centro de Estudios Aplicados al Desarrollo Nuclear | 99. Instituto Superior Pedagógico Félix Varela |
| 76. Instituto “Finlay” | 100. Centro de Investigación y Desarrollo Técnico Del Ministerio Del Interior |
| 77. Instituto de Suelos | 101. Centro de Inmunoensayo |
| 78. Centro de Investigaciones en Microelectrónica del Ispjae | 102. Centro de Investigaciones D’economía Internacional; Universidad Habana |
| 79. Instituto Superior Pedagógico “Capitán Silverio Blanco Núñez” | 103. Sociedad Cubana de Investigaciones Filosóficas |
| | 104. Sociedad Cubana de Botánica |

APPENDIX 2

Publicly Held Offices of the American Statistical Association

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|--|--|
| • ASA Board of Directors | • Section on Statistical Consulting |
| • Council of Sections Gov Board | • Section on Statistical Education |
| • Council of Chapters Governing Board (COGCB) | • Section on Statistical Graphics |
| • Biopharmaceutical Section | • Section on Statistics and Marketing |
| • Business and Economic Statistics Section | • Section on Statistics and the Environment |
| • Council of Sections | • Section on Statistics in Epidemiology |
| • Section on Bayesian Statistical Science | • Section on Statistics in Sports |
| • Section on Government Statistics | • Section on Survey Research Methods |
| • Section on Nonparametric Statistics | • Section on Teaching of Statistics in Health Sciences |
| • Section on Physical and Engineering Sciences | • Social Statistics Section |
| • Section on Quality and Productivity | • Alabama Chapter (C057) |
| • Section on Risk Analysis | • Arizona Chapter (C061) |
| • Section on Statistical Computing | • (.....all States.....) |

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- Utah Chapter (C038)
- Washington Statistical Society (C002)
- ASA NCTM Joint Comm on Curriculum in Stats and Probability
- ASA Task Force on Electronic Journals
- ASA-MAA Joint Comm on Undergraduate Statistics
- Advisory Committee on Continuing Education
- Advisory Committee on Quantitative Literacy
- Budget Committee of the Board of Directors
- Census Advisory Committee
- Committee of Representatives to Aaas
- Committee on ASA Archives and Historical Materials
- Committee on Applied Statisticians
- Committee on Award of Outstanding Statistical Application
- Committee on Career Development
- Committee on Electronic Communications
- Committee on Energy Statistics
- Committee on Gay and Lesbian Concerns in Statistics
- Committee on International Relations in Statistics
- Committee on Scientific Freedom and Human Rights
- Committee on Women in Statistics
- Current Index to Statistics Management Committee
- Management Review Committee of the Board of Directors
- Planning Committee of the Board of Directors
- Radiation and Health Steering Committee
- Scientific and Public Affairs Advisory Committee
- Technometrics Management Committee
- Web Editorial Board