For The Record

THE UST RESEARCH CENTER... 50 Years Later

Fortunato Sevilla III

University of Santo Tomas, España Boulevard, 1015 Manila, Philippines

Fifty years ago, the University Economic Council, under the rectorship of Fr. Juan Labrador, O.P., approved the establishment of the UST Research Center. The creation of the Research Center was seen as a worthy marker of the 350th Anniversary of the foundation of the University of Santo Tomas. Its primary objective was to encourage faculty members to engage in scholarly research activities. Fr. Lorenzo Rodriguez, O.P., the first director of the UST Research Center, asserted in 1962 that “in the light of scientific development, an institution of higher learning seems to be incomplete without an organized group devoted to research.”

The Research Center has grown to be one of the pillars of the University. It has contributed to the reputation of the university as a higher education institute with a strong research program. It has provided a venue for faculty members and their students to engage in “the pursuit of truth and the preservation, advancement and transmission of knowledge in the arts and the sciences.” It has enabled faculty members and their students to produce research papers for publication in international journals and presentation in international conferences, promoting an increased local and global visibility of the university.

The development of the Research Center increased pace in 1984, when the University Rector Fr. Norberto Castillo, O.P. articulated a commitment to research in the mission and vision statement of the university. This move created an impetus which led to the formation of several research units focused on varied fields, leaving research work on the natural sciences in the Research Center which was renamed in 1986 as the Research Center for the Natural Sciences.

The growth of the Research Center was further stimulated when a building dedicated to research was conceptualized during the rectorship of Fr. Rolando de la Rosa, O.P. in the 1990s and was constructed during the term of Fr. Tamerlane Lana, O.P. as University Rector in 2001. It brought forth an improved research profile, an intensified research culture and a renewed affirmation of the research mission of the University.

The Research Center is indeed a consolidation of the efforts of the University to uphold a vision set a half-century ago. It embodies a dedication to maintain research as the major premise for higher education in the University. It remains as a worthy milestone for the University at the onset of its fifth centennial.

A FOCUSED SCOPE

Presently, the research work being carried out in the Research Center covers a broad range of interests in the natural and applied sciences, and includes the field of studies offered in several faculties and colleges of the university, such as the College of Science, the Faculty of Pharmacy, the Faculty of Engineering and the Faculty of Medicine and Surgery. When it was established, it was conceived to encompass a wide area of exploration which included the cultural sciences and the experimental sciences. However, in the succeeding years, it gradually assumed a basic orientation towards the natural sciences.

The studies conducted in the Research Center involve basic and applied research in the biological sciences, chemistry, physics, mathematics, pharmacy, engineering, food science and philosophy. Several research programs are multidisciplinary, approaching the problem from varied viewpoints in order to obtain maximum information.

The natural resources and biodiversity has become a priority research interest in the Center. Philippine plants, aquatic organisms and microorganisms are investigated for inventory and classification. Natural products with biological activities and nutritional value are derived from plants with new technologies being harnessed for their isolation and characterization. State-of-the-art techniques are adopted in biodiversity studies involving flora, fauna and microorganisms in terrestrial and aquatic systems.

Creative and innovative projects in advanced science and technology are conducted in the Center. Research teams focus on applications of nanotechnology, information technology, molecular biology and biotechnology towards the development of novel materials and systems that can offer solutions to urgent problems facing the country. Studies are undertaken to contribute to the advancement of cutting-edge technology development in the field of energy, structural materials, sensors and diagnostic devices.

The Center also hosts non-experimental work in applied mathematics, applied physics and applied philosophy. Mathematical principles and methods are applied for predicting and optimizing the behavior of systems ranging from microscopic entities such as nanoparticles to macroscopic phenomenon such as public health and industrial resources. Philosophical reflections delve on the ethical implications of the advancement and impact of emerging science and technology

The research programs in the Center reflect the diversity of ideas and variety of interest existing in the University. These endeavors energize the academic atmosphere in the University, promoting learning and stimulating a concern for society and the environment. To mirror the dominant orientation of directing research to provide scientific and technical solution to industrial and environmental problems, the Center has been renamed in 2010 as the Research Center for the Natural and Applied Sciences.
RESEARCH LABORATORIES

The Research Center is now housed in a building that concretizes the commitment of the University to its research mission. Since the 1970s, it occupied a wing of the fourth floor of the Clinical Division of the UST Hospital. With the advent of a new millennium, a four-storey building was erected to centralize the research activities of the University. It was inaugurated on 2001 during the feast day of St. Albert the Great, a Dominican intellectual and the patron saint of scientists. The building was named as the Thomas Aquinas Research Complex (TARC) in honor of the patron saint of the University.

Together with the Research Center in the TARC are the Office for Research and Innovation, (formerly the Office for Research and Development), which coordinates the research program of the university; the Research Center for Cultural, Educational and Social Issues; and the Graduate School. The north wing of the building is occupied by the laboratories of the Research Center, and the south wing is where the office and the lecture rooms of the Graduate School are situated. The proximity of these units to each other fosters an atmosphere of dynamic multidisciplinary and interdisciplinary interaction and collaboration among the students and the faculty researchers.

The laboratories of the Research Center are distributed in three floors of the building. In the second floor are the Engineering, Physics, Instrumentation and Food Science laboratories. Located in the third floor are the research laboratories for Molecular Biology, Ecology, Microbiology, Plant Science and Pharmacology. The Biochemistry, Phytochemistry and Chemical Sensors and Biosensors laboratories are found in the fourth floor.

The laboratories maintain a wide range of facilities to support the various programs of the Research Center. Up-to-date instrumentation and equipment enable the conduct of research work that meets national and international standards. Safety facilities are installed in the laboratories in harmony with a Laboratory Safety Program that ensures a safe and secure environment for the researchers.

Associated with the Center are an Herbarium, an Animal House and an Analytical Service Laboratory. The Herbarium holds a collection of about 13,000 specimens of plants, including the plant collection of Casto de Elera which dates back to 1877. It provides accession and storage of plant samples, authentication and identification of plant specimens. The Animal House provides facilities for the care and handling of animals used in research work, compliant with the guidelines set by the Institutional Animal Care and Use Committee of the University. The Analytical Services Laboratory manages specialized equipment and instrumentation for chemical analysis to support the needs of some research projects. Among the equipment are a scanning electron microscope, a gas chromatography/mass spectrometry unit, a Fourier Transform Infrared Spectrometer, a spectrofluorimeter, an atomic absorption spectrometer and a differential scanning calorimeter.

The various research laboratories nurture a culture of productive scholarship. These facilities foster an environment conducive to creative investigation, fruitful discussion and inquisitive reflections. These rooms provide an arena for active learning, a locus for dynamic collaboration and a venue for discipleship for the faculty researchers and their students. In these laboratories thrives the spirit of research.
RESEARCH STAFF

As envisioned 50 years ago, faculty members have embraced the paradigm of research in their academic life, coupling it with teaching as their primary obligation in the University. They comprise the vital human resource of the Research Center. They are scientists from varied fields of specialization, such as biochemistry, botany, chemistry, ecology engineering, instrumentation science, mathematics microbiology, molecular biology, pharmacology and physics. They possess scientific expertise and technical experience to push forward the forefront of knowledge and utilize their output in response to the needs of society and the environment.

Faculty members have engaged in research after pursuing higher studies and acquiring advanced academic degrees in Graduate School. Specialized trainings through research fellowships and exchange visits honed their research skills, immersed them in a dynamic research environment and stimulated them to initiate fruitful collaboration with their host scientists. The research load in the University offered opportunities for them to initiate and subsequently strengthen their research track record.

Working together with the faculty researchers are their undergraduate and graduate students. The students are engaged in the research projects of a faculty researcher, who mentors them in their research project, thesis or dissertation. The research involvement enriches the education of the students, bringing them into contact with the real process of discovery and the generation of new knowledge. This discipleship contributes significantly to the development of research human resources and to the growth of research in the country.

The expertise of the research staff and their students are manifested in their publications in high-impact research journals and in their paper presentations in prominent regional and international conferences. Their research accomplishments have merited awards and recognition by prestigious institutions and organizations, such as the Department of Science and Technology, National Academy of Science and Technology, National Research Council of the Philippines, Professional Regulation Commission and the Philippine Association for the Advancement of Science.

The research staff fueled the research culture of the University. Their interaction with the students deepened the education presented by the University. Their collaboration with overseas researchers broadened the global visibility of the University as a research institution. Their research productivity augmented the reputation of the University as a premier institution of higher learning.

RESEARCH PUBLICATION

The Research Center publishes the research output of its staff in the ACTA MANILANA, its official journal. This publication, which first came out in 1965, is issued annually and features research papers, short communications and review papers which have been peer-reviewed and recommended by its panel of international evaluators. It presents an indicator of the productivity of the Research Center, documenting accomplishments of faculty researchers and their students.

The ACTA is cited in the Master Journal List of the Institute of Scientific Information (now known as Thomson Reuter’s Web of Knowledge), a leading world-wide research platform for information in the sciences. It is included in several bibliographic indices, such as the Biological Abstracts, Chemical
Abstracts (until the early 1990s), Electrical and Electronic Abstracts, Institution of Engineering and Technology Inspec, Life Sciences Collection and Physics Abstracts. It was awarded by the Commission on Higher Education (CHED) the top classification under Category 1-A during the journal accreditation that it conducted in 2009.

The Research Center maintains an active journal exchange program with important research libraries and other research institutes, both here in the Philippines and abroad. Thus, the ACTA is listed in the holdings of the Library of Congress (United States), the British Library (United Kingdom), the National Library of Australia (Australia), the Eidgenössische Technische Hochschule Bibliothek (Switzerland), the National Central Library (Taiwan), the Biblioteca Universitaria de Santiago de Compostela (Spain), the Technische Universitätsbibliothek Hannover (Germany), the Vatican Library (Italy), the Biblioteca Central de Universidad Nacional Autonoma de Mexico (Mexico), the University of California Berkeley Library (United States), the Smithsonian Institution Library (United States) and the Yale University (United States).

The research work conducted in the Research Center is also published in other international refereed journals. The faculty researchers are encouraged to submit their research papers to prestigious high-impact refereed scientific journals. The acceptance of their papers in these journals is an indication of the quality of the research work described in the paper, having passed through the scrutiny of and merited recommendation for publication from a panel of international experts. These publications situate the research done in the University in the global field and immortalize the contribution of the faculty researchers to the stock of knowledge.

**Research Funding**

The financial resources of the Research Center are derived from budgetary allocations of the University. This budget enables a number of research projects to be carried out in the Center. Complemented by contributions from several colleges and faculties, it supports the acquisition of up-to-date equipment and instrumentation needed by the researchers. It also sustains activities that lead to a strengthened research agenda and an active research environment.

Several research projects receive financial support from national and international funding agencies. Faculty researchers have been awarded grants by agencies of the Department of Science and Technology, such as the National Research Council of the Philippines, the Philippine Council for Health Research and Development, Philippine Council for Advanced Science and Technology Research and Development (renamed as Philippine Council for Industry, Energy and Emerging Technology Research and Development) and the Philippine Council for Aquatic and Marine Research and Development. Other national agencies, such as the Commission on Higher Education and the Philippine Coconut Authority have also provided research grants to the faculty researchers. Projects in the Research Center have been supported by international institutions, such as the UNESCO, the International Foundation for Science (Sweden), the Mycological Society of America (U.S.A.) and the Rufford Foundation (United Kingdom).

Increased funding cultivates a dynamic and productive research environment. External financial support signifies a recognition of the credibility and capability of the Research Center to fulfill the goals set by generous benefactors. The sustained economic outlay of the University for research signals a fulfillment of its mission to generate, advance and diffuse knowledge.
RESEARCH LINKAGE

A component of the strategy of the Research Center for a meaningful growth is networking with research institutions and organizations. This alliance offers opportunities to acquire new knowledge and skills that could expand the capability of the faculty researchers. It leads to collaborative projects that contribute to the realization of shared objectives and interests. It promotes the exchange of knowledge and expertise that strengthens the research agenda of the participant partners.

The Research Center supports research projects that involve collaborations with research groups in other parts of the country and in Europe, Australia, Asia and in North America. Through this partnership, the faculty researchers gained access to equipment and instrumentation that are not available in the Research Center. Exchange visits undertaken under these linkage programs promoted interactions, not only in scientific and technical levels but also in cultural and social perspectives.

The Research Center actively participates in national and international network programs. It contributes to the national program for the development of research manpower by hosting graduate school scholars from other institutions in its research laboratories. The faculty researchers are involved in national research development programs promoting advanced technologies, such as biotechnology, nanotechnology, photonics and molecular biology, in the country. They are also active in Asian regional network programs promoting research in natural products, chemical sensors and biosensors, chemical engineering, microbiology, ecology, molecular biology, and biotechnology.

CONCLUSION

The fifty years of the Research Center are a tribute to the Directors who ushered and strategized its growth and progress. The Research Center gained a stronghold in the University due to the vision and dedication of Dominican scientists — Fr. Lorenzo Rodriguez, O.P., Fr. Jacinto de Juan, O.P. and Fr. Ciriaco Pedrosa, O.P. — who served as the Director of the Research Center in its first decades. Its expansion broadened and its internationalization evolved as a result of the foresight and strategic planning of the succeeding directors, including Dr. Mariano Pañgan, Dr. Fortunato Sevilla III, Dr. Maribel Nonato and Dr. Christina Binag, who applied their research experience and management skills in steering the Research Center to its prominence not only in the University campus but also in the national and international setting.

The fifty years of the Research Center present a testimony to faculty researchers who upheld research as integral to their role as educators in the University. They inspired, challenged and guided their students in the pursuit of new knowledge and in the search for innovative solutions to national problems through science and technology. They embody the ideals that formed the premise for the establishment of the Research Center — creative and productive scholarship.
1THE RESEARCH CENTER FOR THE NATURAL SCIENCES
Its Directors Through the Years

FR. LORENZO RODRIGUEZ, O.P.
1962–1966
Fr. Lorenzo Rodriguez was the first Director of the Research Center. He occupied the position from 1962 to 1966 and was instrumental in building the original framework of the Center.

FR. JACINTO DE JUAN, O.P.
1966–1970
Fr. Jacinto de Juan was the first Director of the Research Center from 1966 to 1970. His term saw the establishment of the physical facilities of the Center.

FR. CIRIACO PEDROSA, O.P.
1970–1987
Fr. Ciriaco Pedrosa was the Director of the Research Center for almost two decades. He occupied this office from 1970 up to 1987 when he was named Director Emeritus. His term of office was marked by the accelerated growth in the research output of the Center and by the increased linkage with external research agencies.

DR. MARIANO PAÑGAN
1985–1987
Dr. Mariano Pañgan was Associate Director of the Research Center from 1985 to 1987. He delineated the scope of the Research Center to include only the Natural Sciences. During his term, Dr. Pañgan called the attention of the academic community on the value of research as an integral part of education among faculty members.

1Acta Manilana 36 (1987) 1–2
PROF. FORTUNATO SEVILLA III, Ph.D.
1987–2000

Prof. Fortunato Sevilla III was the Director of the Research Center from 1987 to 2000. During his term, the range of the research areas covered by the Research Center broadened, with more faculty members coming in and working on projects on Analytical Chemistry, Molecular Biology, Biotechnology, and Chemical Engineering. He encouraged more graduate students to conduct work on their thesis or dissertation in the Research Center under the supervision of a faculty researcher. His term was marked by a rise in the international publication output of the Research Center.

PROF. MARIBEL G. NONATO, Ph.D.
2000–2007

Prof. Maribel G. Nonato was the Director of the Research Center from 2000 to 2007. Her term was marked by the transfer of the Research Center to the Thomas Aquinas Research Complex, an edifice dedicated to higher studies and research. She formalized the establishment of the UST Herbarium and the UST Collection of Microbial Strains to support the research work in the field of the biological sciences. During her term, more faculty members were awarded recognition for their research achievements by external agencies, such as the Department of Science and Technology.

PROF. MA. CHRISTINA A. BINAG, Ph.D.
2008–2012

Prof. Christina A. Binag was the Director of the Research Center from 2008 to 2012. Her term witnessed an increase in the external financial support for the research work in the Research Center. The scope of the research work conducted in the Center diversified to include nanotechnology, applied mathematics, applied philosophy, and theoretical physics. She promoted an electronic version and the consequent increased visibility of the Acta Manilana through membership in the Philippine Journal Online.