Interview: DOST Secretary Antonio V. Arizabal

Patricia B. Generoso

The responsibilities of being a cabinet member and DOST secretary certainly keep Dr. Arizabal very busy. Therefore, one needs buckets of patience while waiting to be granted an interview.

After two months of waiting I finally got an appointment. But no sooner was the interview scheduled than it was cancelled. Two more postponements followed, and then the big day. Perhaps I was psyching myself for another postponement, hence I did not cancel the other commitments I had made for that day. I could not believe my ears then, when I was informed that Dr. Arizabal's secretary had called the day prior to the interview to confirm the appointment.

I dismissed my physiology class 30 minutes early, took the monorail, and arrived 20 minutes late for the interview. Dr. Arizabal smiled and stood up as I was ushered into the room. He looked younger than his pictures. We shook hands and he asked what I would like to drink. I answered, "Nothing, just plain water." (I was on a diet.) He laughed and in a fatherly voice insisted, "Don't be bashful, what do you want to drink?" I settled for a Coke.

Present during the interview was his executive secretary, with whom he confirmed some figures every now and then. I sensed his uphill battle with the scientific community on his stand favoring applied research over basic research. I believe one can always attack a problem at several points to get the right solution. When Dr. Arizabal talked about the DOST reorganization, his voice dropped to a whisper.

It was a long walk from the DOST building to the jeepney stop. With each step I took, I felt more sad. Only ₱630 million for Science and Technology, the backbone of this nation's progress; and ₱56 billion for the IMF to pay for a debt the benefits of which we have mostly seen only in print.

What is the budget of DOST for 1988-1989?

The budget for 1988 is ₱630 million. Roughly 10-15 percent of the overall budget is from foreign assistance and the rest is from the National Government.

What are some projects funded under basic research?

(The) basic projects we have done are those in the universities and those that are funded by the Philippine National Science Society (formerly the National Research Council of the Philippines). Much of it is in the life sciences.

What are some projects funded under applied research?

The vast majority of projects are applied. (These are) conducted by research institutes directly under the DOST and under Departments like Agriculture, Natural Resources, and Trade and Industry. We assist institutes (outside of DOST) in terms of grants-in-aid.

The universities still get a considerable amount of grants-in-aid from DOST-assisted projects. Although practically all the basic researches are done in the universities, still the emphasis is on applied research.

How would you respond to the allegation that our concentration on applied research may backfire in the long run in that we will not be developing our own technology but will simply be paying royalties for technology from other researches?

No, that is not true. You see, basic research has to do with contribution to fundamental knowledge whereas applied research has to do more with applying established knowledge to produce practical resources, mostly processes or products. If you have a science and technology infrastructure which is one of our main activities, (production) could very well be developed by applied research.

Applied research does not necessarily mean technology transfer. A lot of new products and new processes are the results of applied research.

Regarding royalties, you also spend for acquiring technology by getting it on a transfer basis or generating that technology by doing research. Either way, you spend money. The question is: Which is the surer way and which is the faster way?

Japan decided more than a hundred years ago to acquire technology through purchase, payment of royalties, and things like that. But the Japanese also did one thing: they strengthened their indigenous technology, so that they could improve and modify on the technology as they bought it. These days, the Japanese seldom pay royalties for more than the first contracted period, which is usually five years. After the contracted period, they already know the technology through and through, they have improved on it, they are better than the source.

This is something that most of us will have to learn to do. The Koreans and Taiwanese are learning to do this already. In the beginning, they were just like the Japanese, buying technology and so on. But now they have come to a point where they also, like the Japanese, can absorb the technology and improve on it and generally the repetition of the royalty contract is not necessary.

Now, if you do not have the infrastructure program to absorb the technology and understand it, then agreed, you wind up paying the royalties over and over again.

But sometimes there is no other choice. Coca-cola is the simplest example. Nobody ever produces Coca-cola without paying a small royalty to get the proprietary ingredients that make the drink Coca-cola. Without it, it's something else. Whether you can force your population to have that something else, depends. We are supposed to be a free society. It's the customer's choice.

Know your DOST Secretary

Educational Background: B.S. Chemistry (Cum laude), U.P. Manila, 1952; M.S. in Metallurgical Engineering (First Place), Carnegie Institute of Technology, Pennsylvania, U.S.A., 1957; Ph.D. in Metallurgical Engineering, Carnegie Institute of Technology, 1961.

Honors/Scholarships/Awards: College/University Scholar, University of the Philippines, 1948-1952; First Place, Chemistry Board Examination given by the Government, 1954; Fulbright Scholar to the United States of America, 1955; Research Fellow, American Iron and Steel Institute, Carnegie Institute of Technology, 1957-1961; Awardee - Ten Outstanding Young Men of the Philippines for 1966 in the field of Iron and Steel Technology.

Some Important Positions Held: Senior Engineer Consultant, Strategic Planning Staff for Metalworking Project, MTI, 1982-1983; Executive Director, Metals Industry Research and Development Center, 1968-1982; Technical Consultant, National Development Co., DBP, PNB, and Iron and Steel Authority; Adviser, South East Asia Iron and Steel Institute (SEAISI), 1982-1987; Current Director of 4 Professional Societies and Associations: Phil. Iron and Steel Institute, Phil. Foundry Society, Phil. Instrumentation and Controls Society, Society of Metallurgical Engineers of the Philippines; Member, Technology Transfer Board, 1978-1980, 1982-present; Executive Director, Philippine Council for Industry and Energy Research and Development (PCIERD), 1982-1986.

What is the list of priorities for funded researches for 1989-1990?

(My secretary) can fill you on the list. (See inset on page 21.) Essentially, this is aimed towards utilizing more of the raw materials in the country and importing less of the products because most of these can be done here. Our principal economic problems are unemployment and foreign exchange. If we can produce each year products of sufficient quantity and quality, then we don't have to import anymore. This means foreign exchange savings and at the same time more employment. So we can kill two birds with one stone.

If we can produce in a very competitive way and the quality is very good, we can export. Not only do we save foreign exchange, we also earn foreign exchange. Our thrust is largely in enhancing production and productivity.

Our big problem is that the industrial system is not producing as much as it should. The agricultural system is also inefficient. The amount of rice we are growing per hectare of land is only half of what it should be. If we are really proven efficient we can even get more than what we classify 100 per cent.

Our first approach would be to increase productivity which means that for any resource that we spend, we get more out of it. We are supposed to extract more than what we are extracting right now.

Our farmers are not particularly schooled in using the right technology, or even if they have the access to the right technology they may not have the inputs necessary like fertilizers and insecticides.

Does DOST have a 5-year development plan? What would you like to see?

Yes, we call it a medium-term development plan because it is really six years, but over a year has already passed.

There are certain efforts which could probably yield results rapidly like quality improvement. The quality of our textiles is not too good. So we assist by giving the manufacturers the Testing Services and Facilities in order to test and see that they comply with certain standards. We also help them in some of the process technology, and technology of selection of materials.

All these things can produce very quick results. But they are really based on improving something that already exists. Our thrust should be along these lines : GET IMMEDIATE RESULTS. Increases in quality and productivity can be obtained very quickly. Developing and adapting new products and processes will take a little longer. Here your time horizon might be more, a period of 2 or 4 years. In the other, probably a matter of months. So, if you are after recovery and quick improvements in your system so that you generate income very rapidly, it's good to concentrate on the quality and productivity improvement aspects.

What obligations does DOST attach to every funded research?

Every funded research is supposed to be a property of the government, through DOST. If it is a shared funding then we enter into some definition of terms on how we split profits. On the basis of 100 per cent funding, then that's government property that we just administer.

What is the timetable given for every research project?

Between 2 or 4 years. For short station projects it is about 2 years.

When is the deadline for the submission of research proposals for 1989? Does DOST use calendar or fiscal year?

Calendar year is the same as fiscal year. There is no particular deadline. For proposals submitted on November or December of 1988, you get it in 1989. It's not so bad.

How much of the DOST budget is alloted for basic research?

That is a flexible figure, maybe about 5 per cent of what is available for research and development. So it is not big money. We can't afford it because we don't have the things we need so badly in the applied field. We don't even have enough. So it's very difficult.

I was (in the United States) for quite some time (doing) basic research. Certainly I was interested. But, you see, the U.S. is a very rich country. They can always set aside a small portion of their funds and say "Okay, 5 to 10 per cent is for basic research." Because the whole pie is so large, 5 to 10 per cent is a lot of money.

What really goes to basic research is what organizations like the PNSS allocate to the basic field. The De-

DOST OBJECTIVES

Harness Science and Technology in the economic production sectors to increase the target GNP growth rate 6.8% by at least 2% more, to 8.8%

Provide scientific support in the attainment of social goals especially in health, nutrition, and improvement of quality of life

Develop national infrastructure for advanced science and technology to lay the foundations for the country's transformation into a newly industrialized country (NIC) by the year 2000

S&T Priority Areas

Agricultural diversification and rural productivity
- Development of low-cost, low-input technologies for food and commercial crops to increase farm profitability
- Application of biotechnology and emerging technologies for productivity improvement
- Development of production and post-production technologies for high-quality agricultural, fishery, and forest products
- Development and upgrading of livestock for self-sufficiency
- Integrated and small-scale forest and agro-forestry production schemes for marginal lands
- Management and utilization of marine and aquatic resources for sustained yield

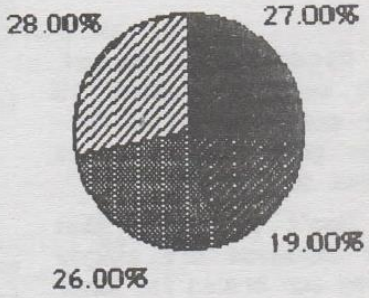
Industrial productivity and competitiveness
- Development of materials and products for selective import substitution
- Development of nontraditional agro-based products for export
- Conversion of local materials to higher value products
- Adaptation of technology for micro-, cottage, small, and medium industries
- Harnessing high technology for higher productivity
- Development of capability for machine building and parts manufacture

Energy, utilities and infrastructure development
- Development of alternative nonconventional energy sources
- Development of materials, components, and standards for the transport and communication industry
- Development of materials, components, and standards for housing and infrastructure

Health and nutrition improvement
- Pharmaceutical R&D for the development, production, and utilization of drugs from indigenous sources
- Biotechnical R&D for the generation, adaptation of technology focused on specific health problems
- Food and nutrition R&D for the improvement of the nutritional status of the population
- Development of more effective health service delivery system

(continue...)

DOST BUDGET DISTRIBUTION



- Administrative Support
- Scientific and Technological Services
- Science Information and Education
- R&D and Technology Transfer

partment Head Office also funds universities only under very meritorious cases. All of these will be in the biological fields because that is about the area where probably some basic research can happen. If we are talking say of physics...

But, Sir, in physics the present trend is in superconductivity which is still in the infantile stage. Since they are using crude materials, perhaps this is one area where we can compete with the developed countries.

Who is the great expert in superconductivity in this country? (Laughs.) That guy should make a lot of money. He doesn't need us. If he is really that good he should make a lot of money. We can do anything, but the important factor is with (what) percentage of success. You see, sometimes people have just concepts and they think these concepts can be translated into reality. But it is not that easy unfortunately. Now, if there is a Filipino who probably spent a lot of his time in the U.S. and has acquired his know-how and then says, "All right, I have all this know-how because I'm here in the U.S. and I've acquired this. I'm ready to come home to the Philippines. I have a particular plan." And he discusses it with us. If it is good enough, we will finance him. Yes, of course, but we want to be assured that there is going to be a certain amount of success. But if the guy doesn't have enough of a background and he just tells us that he is good, he has a lot of convincing to do. We don't say we won't listen. Of course we will listen. If any fellow comes to us and tells us , "We have this splendid plan that's going to make the Philippines king of the superconductors field." Obviously we will be electrified by such a proposal. I haven't seen one yet. Anybody who has such a plan or such a dream, who feels he can make it succeed, is welcome. And if he can convince us, we will assist him to the maximum strength. I will give the whole ₱630 million and go back to the government for ₱630 million more.

(cont'd)

Improvement of science education

Development of institutional capabilities in science education at all levels by modernization of laboratory equipment, upgrading of S&T information resources and curriculum development

Development program in upgrading teaching competencies ofscience and mathematics teachers, and carreers for talented youth

Promotion of advanced science and technology

Strategic research in such fields as microelectronics, biotechnology, materials science, and institution development

Regarding the budget, you said that about 15 per cent came from foreign governments. Is Japan one of them?

Yes, very much so. You see, the big recipient of this foreign fund is PAGASA (the weather bureau).

Don't you think that the Japanese are simply using our brains for their researches and exploiting us?

Everybody will do that. All these foreign groups have their own interests. Nobody will do that for charity. If they can get something, they will get it. These are the risks that we have to take whenever we go to a deal like this. We cannot definitely exclude them from knowing what we are doing.

The world is open to exploitation. Whenever you buy a Japanese product, you are a copycat. The Philippines is the cheapest place to buy software and program materials for the computer. This is copying and nobody can do anything. The Philippines is such a small market that it is not worth the legal expenses to run after these people who are copying, besides it is going to be very hard to pin them down. The very fact that these softwares are available in the market and can be copied is a risk.

It is actually happening.

You also encounter the same things . You just hope that in the end, you have chosen your projects well so that you have the natural advantage as Filipinos to pursue these projects. You have the raw materials, human resources, market and whatever it is that gives you your advantage. That is your edge. But it is not the ability to keep secret the knowledge because the only way you can do that is to fund your own research.

How long is your term as Secretary of DOST? When your term is over, how would you like people to remember your administration?

As long as the President likes. Normally, the longest possible is within the term of the President. The old NSDB had a tenure. But now that's already done under the new structure. So all cabinet men hold office at the pleasure of the President, and I am just like any other.

I would like our regime in DOST to be characterized by an increase in the utilization of the most modern technologies. That will definitely modernize agriculture and industry to make it very productive, to improve the economy of the country, income of the workers, quality of our products, and all these things. Our big problem the way I perceive it is in the utilization of technology. We are not utilizing technology properly and adequately because precisely we are worrying about basic research. We think that the long-term solution to the strengthening of science and technology is only through basic research. ※

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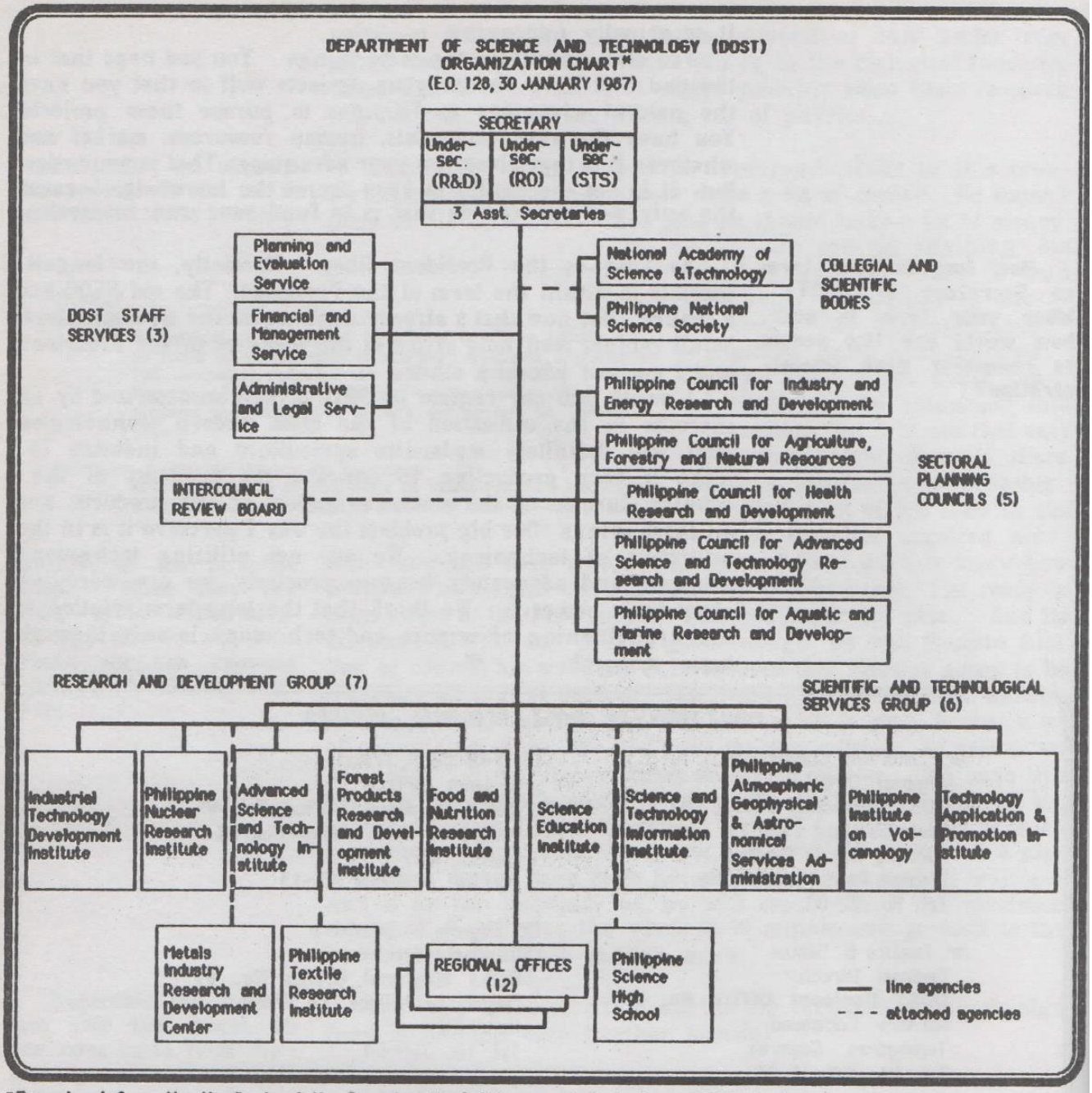

*Reproduced from the Handbook of the Department of Science and Technology, 1987, pp. 5-6.

"We are in the reorganization process at DOST, and should have gotten out half of DOST personnel. We are not allowed to do that . . . out of humanitarian reasons. It is not easy to get jobs. Phasing-out is not the solution because one of the major objectives (of the government) is providing for employment, and here we are kicking out people for the sake of efficiency.

Everybody knows from a management point of view that the entire government can do better if we retain one-half of the number of people because it is really overstaffed. Secretary of Budget Carague, who is a management expert, also mentioned that if we retain half we can do better. A good percentage of the other half is working against you, they are demonstrating and complaining. Only the other half is busy enough working."

- Dr. Antonio V. Arizabal